

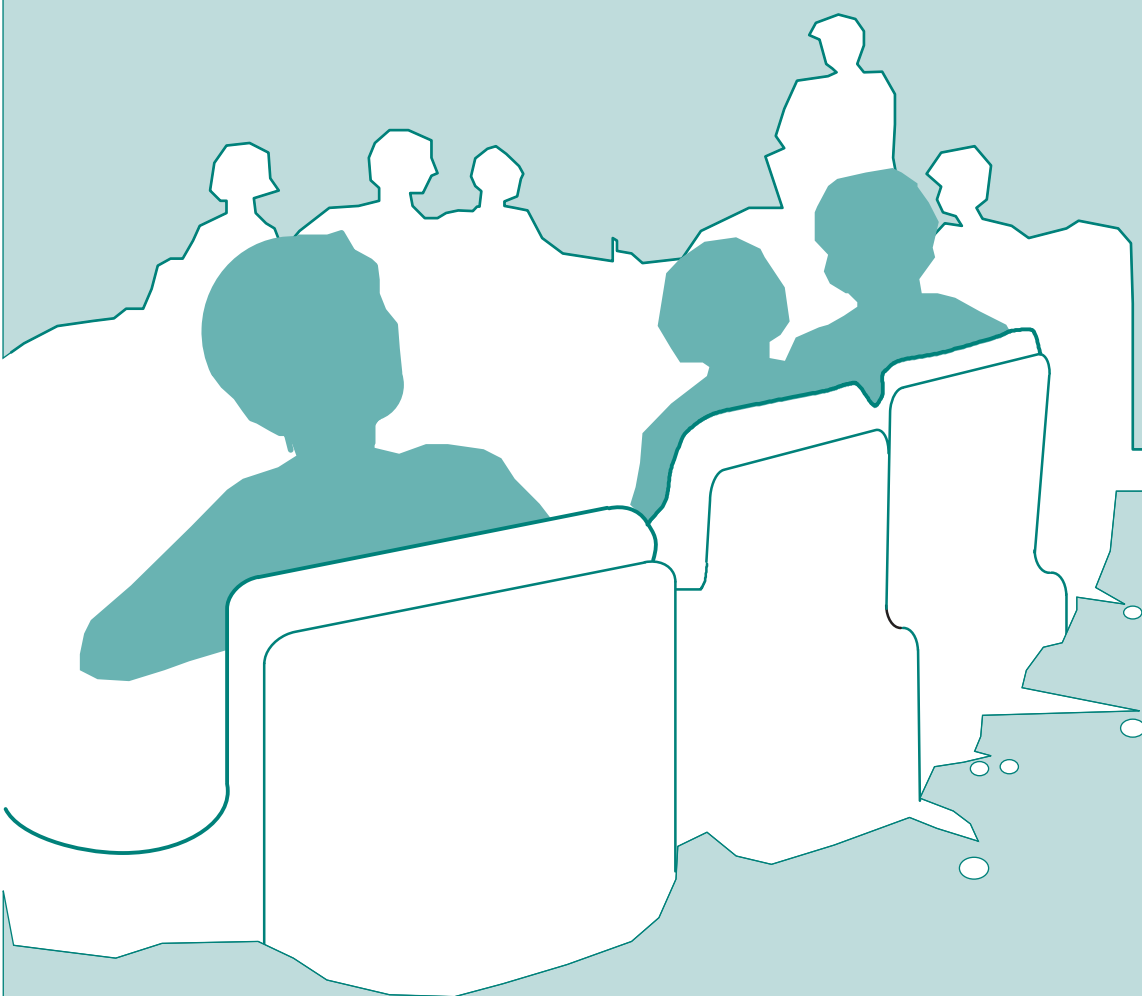
# Minutes and Report of Committee Recommendations: 2001

*October 18-19, 2001*

Issued May 2002

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## **Census Advisory Committee of Professional Associations**



**USCENSUSBUREAU**

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U.S. Department of Commerce  
Economics and Statistics Administration  
U.S. CENSUS BUREAU

MINUTES OF THE CENSUS ADVISORY COMMITTEE  
OF THE PROFESSIONAL ASSOCIATIONS

(This Committee consists of members of the American Economic Association [AEA], the American Marketing Association [AMA], the American Statistical Association [ASA], and the Population Association of America [PAA].)

At the Sheraton Crystal City Hotel, Arlington, VA, October 18-19, 2001

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Minutes Prepared by the History Staff  
Attendants at Meeting

Present

Mr. Tony Adams (AMA)  
Thomas R. Belin (ASA)  
Roger R. Betancourt (Co-Facilitator) (AEA)  
Suzanne Bianchi (PAA)  
Lynn E. Browne (AEA)  
Nancy Denton (PAA)  
Michael Etzel (Facilitator) (AMA)  
Joseph Garrett (Facilitator) (ASA)  
Malay Ghosh (ASA)  
Austan Goolsbee (AEA)  
Shane Greenstein (AEA)  
Frank A. Haas (AMA)  
Barrett Lee (PAA)  
Sharon L. Lohr (ASA)  
Rebecca A. Maynard (AEA)  
William O'Hare (ASA)  
Ariel Pakes (Co-Facilitator) (AEA)  
Mark J. Roberts (AEA)  
Stanley Smith (Facilitator) (Chairperson) (PAA)  
Philip L. Swan (AEA)  
Sybil Stershic (AMA)  
Mary Waters (PAA)

Other Persons Present

Stephen Andrews, Economist, U.S. Bureau of  
Economic Analysis  
Michael Jameson, Creative Director, Image  
Media Services  
Evelyn Agpalasin, Account Executive, Image  
Media Services  
Trisha Derr, Mathematician, Office of  
Inspector  
General, U.S. Department of Commerce  
E.R. Gregory, Associate Under Secretary, U.S.  
Department of Commerce  
Linda Jacobsen, Sr. Vice President, Claritas  
Melissa Krzywicki, Professional Staff,  
Subcommittee on the Census, U.S. House of  
Representatives  
Ty B. Mitchell, Analyst, U.S. General  
Accounting Office  
Lee Price, U.S. Department of Commerce

Absent

Michael A. Hidioglou (ASA)  
Thomas Juster (ASA)  
Sharon M. Lee (PAA)  
Daniel Lichter (PAA)  
Nancy A. Mathiowetz (ASA)  
Connie Pechmann (AMA)  
Robert Peterson (AMA)  
Arthur Redmond (AMA)  
Robert L. Santos (ASA)  
Carol Shea (AMA)  
Daniel T. Slesnick (AEA)  
James Smith (PAA)  
Rosann Spiro (AMA)

## Introductory Remarks

Mr. Thompson (U.S. Census Bureau) reported that the Data Access and Dissemination Systems (DADS) program was realigned from the Decennial Systems and Contract Management Office to the Office of the Assistant Director for Marketing and Customer Liaison.

Mr. Thompson announced that the second terms of several members of the Advisory Committee of Professional Associations had ended and that these representatives had left the Committee—

- ! Ms. Katherine Bock-Jocz (American Marketing Association [AMA]).
- ! Drs. Linda Jacobsen, Jacob Klerman, and Ross Stolzenberg (Population Association of America [PAA]).

New members of Committee include—

- ! Dr. Austan Goolsbee (American Economic Association [AEA]).
- ! Dr. Frank Haas (AMA).
- ! Drs. Suzanne Bianchi and James Smith (PAA).

The following members were appointed to their second terms—

- ! Drs. Connie Pechmann and Robert Peterson and Ms. Carol Shea (AMA).

Finally, the second terms of the following members will end in December 2001 and they will rotate off the Committee at that time—

- ! Dr. Ariel Pakes (AEA).
- ! Mr. Joseph Garrett and Drs. Malay Ghosh and William O'Hare (American Statistical Association [ASA]).

Mr. Thompson announced that this would be Ms. Paula Muroff's (U.S. Census Bureau) last meeting as Liaison to the Committee and that she will be retiring early in 2002.

He said that the next meeting of the Census Advisory Committee of Professional Associations will take place at the Sheraton Crystal City Hotel in Arlington, VA, in April 2002.

Post-census operations are continuing apace. The redistricting data file was released in March-April 2001, and Summary File 1 was made available between June and August, 2001. The agency is releasing data profiles for the Nation's 435 congressional districts. The first Census 2000 Supplementary Survey data were released in August, and the agency is preparing to make sample census data available. The Count Question Resolution program is being implemented and will be discussed later today.

In economic data releases, the agency recently released five principal economic indicators. Implementation of the North American Industry Classification System (NAICS) will allow the Census

Bureau to release more detailed economic data. In June 2001, the agency released the E-Stats Analytical Report. Over the next 6 months, the Census Bureau plans to open two more research data centers at the University of Michigan and in Chicago (the latter serving a consortium of universities).

Census Bureau statisticians continue work on evaluating the results of Census 2000. These studies will assess a number of operations in addition to the Accuracy and Coverage Evaluation (A.C.E.) program.

Mr. Barron (U.S. Census Bureau) announced that the Senate had confirmed the new Under Secretary of Commerce for Economic Affairs, Dr. Kathleen Cooper. In addition, Ms. Elizabeth Gregory was appointed Associate Under Secretary of Commerce for Communications, and Mr. Sam Bodman has been confirmed as Deputy Secretary of Commerce.

President Bush has announced his intention to nominate Mr. C. Louis Kincannon as the new Director of the Census Bureau.

Mr. Thompson was selected as the new Principal Associate Director for Programs, and Mr. Jay Waite was appointed Associate Director for Decennial Census. Ms. Carol Van Horn has been appointed Assistant Director for Decennial Census and also is serving as Mr. Barron's chief of staff. Ms. Teresa Angueira was named Chief of the Decennial Management Division, and Mr. Mark Wallace has become the Chief of the Service Sector Statistics Division.

Mr. Barron memorialized two Census Bureau employees, Mss. Marion Britton and Waleska Martinez, from the New York Regional Office, who died in the crash in western Pennsylvania on the airplane hijacked by terrorists on September 11, 2001. The agency held a memorial service in their honor at headquarters, in Suitland, MD; memorial services also were held in New York and New Jersey.

He noted that the Census Bureau is currently funded by a continuing resolution through October 31, 2001, or until the appropriations bill becomes law, which means that the agency cannot initiate any new programs or procurements. He pointed out that the budget outlook for fiscal year (FY) 2002 is very good. Both the House of Representatives and the Senate have passed the agency's appropriation at approximately the amount requested. Once signed into law, the funding will allow for the continuation of existing programs and for the early stages of several new programs.

The Congress also has appropriated \$43 million for designing a new Census Bureau headquarters building at the Suitland Federal Center. The General Services Administration (GSA) has received an additional \$8 million in FY 2002 to help with that planning.

On September 28, 2001, the agency delivered a report to Congress (as required by the FY 2001 appropriations law) on counting Americans living overseas in the 2010 Census. The report outlines issues associated with efforts to count Americans and their dependents living abroad (such as whether these people would be included in totals for apportionment, redistricting, and other purposes). The agency will host a conference on this topic on November 26 and 27 to obtain input on policy and technical issues from stakeholders.

Pursuant to the requirements of Public Law 105-119, the Census Monitoring Board was disbanded on September 30, 2001.

Turning to the recent adjustment decision, Mr. Barron noted that at the time of the previous adjustment recommendation in March 2001, members of the Executive Steering Committee for Accuracy and Coverage Evaluation Policy (ESCAP) expressed serious reservations about the accuracy of the Accuracy and Coverage Evaluation (A.C.E.) survey and dual-systems estimation methodology. Work over the last 6 months confirmed that the A.C.E. overstated the net undercount in the census by at least 3 million people. This error resulted from the inability of the A.C.E. to measure census erroneous enumerations (many of which were duplicates). The A.C.E. results cannot be used in their current form. Revisions based on additional review and analysis will be needed before the A.C.E. estimates can be considered for use. He agreed with the recommendation that the A.C.E. estimates should not be used for non-redistricting purposes and decided that these estimates should not be incorporated into the remaining decennial census products, postcensal estimates, and survey controls. He also agreed that later research could develop methods to correct the A.C.E. data and that he would consider using corrected estimates, if they were to become available in the future, in the various estimates programs. He thought the agency should reconsider, on an annual basis, using corrected and improved A.C.E. estimates.

Given the quality and thoroughness of the research presented to him by the technical staff, Mr. Barron thought the decision not to use corrected data was straightforward. The A.C.E. did not produce the results many of its supporters thought it would. Both the census and the A.C.E. were difficult programs to administer under the best of conditions. While he was disappointed, he realized that the agency was working under very tight time constraints.

In the original March 2001 recommendation against using A.C.E. estimates for redistricting, the agency used a series of criteria that were specified in advance. For example, the Census Bureau said it would use demographic analysis (DA) to evaluate the accuracy of the census and the A.C.E. estimates. While some critics have questioned the role of DA, past evaluations have proven its worth. In both the 1990 and 2000 censuses, DA informed the Census Bureau of errors in the dual-system estimation process. Most of the disappointment with the performance of DA in Census 2000 seems to be related to assumptions about the size of the undocumented population. Revised DA estimates were calculated as part of the research program that informed the recent adjustment decision. He was disappointed that some observers felt that DA never should have been one of the criteria for evaluating the accuracy of Census 2000.

Representative Miller (R-FL), chair of the Census Bureau's oversight subcommittee in the House of Representatives, gave agency staff an opportunity to present preliminary plans for the 2010 census. Mr. Barron reported that during the briefing of congressional staff he said that preparation for the decennial census should probably never end. The planning process should be funded more adequately, particularly in the early years of the census cycle. The American Community Survey should be fully implemented as soon as possible to allow the Census Bureau to focus on 2010 planning without having to worry about including a long form.

While 2010 seems a long way in the future, it really is not. To make the 2010 census a better census than its predecessor, the agency needs to be using modern technology to improve the address list and working on innovative ways to deal with group quarters now.

Despite its problems, Census 2000 was an excellent census—maybe the best. The Census Bureau achieved this result against all odds in an exceedingly difficult political environment.

Dr. O'Hare (ASA) asked if funding for a new Census Bureau building would compete with funding requests for other census programs, such as the American Community Survey. Mr. Barron noted that the budget for building construction will appear in the General Services Administration's (GSA's) allocation and is separate from that for ongoing census programs. Dr. Price (U.S. Department of Commerce) added that the \$43 million appropriation to design a building appropriate for a statistical agency had already been given to the GSA. Mr. Barron said that he had met recently with the architect of the new building and that he hoped that with the opening of the new metro stop and a new building, the Census Bureau would become a more attractive place to work.

Dr. Knickerbocker (U.S. Census Bureau) stated that two other Federal advisory committees have interests and issues similar to this Committee—one committee advises the U.S. Bureau of Economic Analysis (BEA) on macro-economic issues relating to national income and product accounts and the other, the Federal Economic Statistics Advisory Committee, advises the BEA, Census Bureau, and Bureau of Labor Statistics (BLS) on issues of interest to the BLS. A proposal has been made to invite the members of all three committees to attend the others' meetings for the purpose of expanding communication among committee members. This proposal will be implemented in the Fall of 2001, unless there is substantial disagreement among the committees.

#### Census Bureau Responses to Committee Recommendations/Report on the October 2000 Meeting

Dr. Belin (American Statistical Association [ASA]) commented that the thickness of the package of recommendations and responses from the last meeting appeared quite substantial and wondered if this was a common occurrence. Ms. Muroff (U.S. Census Bureau) replied that the number and length of recommendations and responses from the April 2001 meeting were unusually large and should not be viewed as typical.

#### Executive Steering Committee for Accuracy and Coverage Evaluation Policy Update

Mr. Thompson (U.S. Census Bureau) said that in March 2001, the Census Bureau stated that Census 2000 would not be adjusted for redistricting primarily because of discrepancies between the population estimates from the Accuracy and Coverage Evaluation (A.C.E.) survey and demographic analysis (DA) that could not be resolved in the time available. According to DA, Census 2000 overcounted the U.S. population by about 0.65 percent, while the A.C.E. estimates indicated an undercount of approximately 1.18 percent. In an effort to resolve this discrepancy, the Executive Steering Committee for Accuracy and Coverage Evaluation Policy (ESCAP) identified three possible scenarios that needed to be investigated—

- ! Estimates from the 1990 census post-enumeration survey, the 1990 DA, and the 1990 census all undercounted the population to a significantly greater extent than previously thought.
- ! Demographic analysis techniques failed to measure the full growth in the population between 1990 and 2000, largely because the estimates of the foreign-born population may have been too low.

- ! Census 2000, as corrected by the A.C.E., overestimated the Nation's population, raising the possibility of an undiscovered error in the A.C.E.

Since March 2001, Census Bureau experts closely examined the A.C.E., Census 2000, and DA. Dr. Long (U.S. Census Bureau) and his staff worked with outside experts to reexamine DA techniques, rebenchmark the DA, and use Census 2000 sample data to produce better estimates of the foreign-born population. This work produced an improved DA estimate of the total population indicating that Census 2000 contained a small undercount of 0.12 percent.

Agency experts also conducted extensive evaluations of the A.C.E. Three of these were of particular importance to ESCAP members—

- ! An evaluation follow-up, which consisted of reinterviewing a subsample of the A.C.E. records.
- ! A matching error study, in which expert matchers rematched A.C.E. records.
- ! A duplication study, which matched A.C.E. records against the entire census to identify potential duplicates. This type of evaluation would not have been possible in earlier censuses because the electronic records of those censuses did not contain names. In Census 2000, the agency used optical character recognition software to “read” a substantial proportion of the names on completed census questionnaires and associate those names with the appropriate individual-level information. This allowed the Census Bureau to “unduplicate” multiple responses from the same address in real time.

The A.C.E. uses a mathematical counting process called dual-system estimation to measure census omissions, subtract erroneous inclusions, produce measures of net coverage for groupings of the population called post-strata, and calculate undercount estimates. Both components of the A.C.E. were thoroughly evaluated. Census Bureau experts concluded that the A.C.E. did measure census omissions accurately. However, the A.C.E.'s handling of erroneous inclusions was more problematic. During the summer, the evaluation followup results indicated that the A.C.E. had a fairly serious problem measuring “other residents,” i.e., erroneous inclusions that are more than a couple of blocks away from each other. A review of the evaluation followup data confirmed the initial finding. The duplication study corroborated that there was a substantial number of duplications in the census that the A.C.E. had not measured properly. On the basis of these studies, the agency concluded that the A.C.E. overstated the undercount by at least 3 million people.

Preliminary revisions to the A.C.E. data reduced the net undercount of non-Hispanic Blacks from 2.17 percent to 0.78 percent, of Hispanics from 2.85 percent to 1.25 percent, and of all others (largely non-Hispanic Whites) from a net undercount of 0.73 percent to a net overcount of 0.28 percent. These revisions place the overall undercount rate at about 0.06 percent. (Undercount rates are not yet available for American Indians (on or off reservation), Asians, or Native Hawaiians and other Pacific Islanders.) These rates are much closer to the estimates based on a revised version of DA. The revised estimates from DA suggest a Black undercount of about 2.78 percent and a nonblack overcount of about 0.29 percent. Census Bureau officials feel much better about the consistency of the preliminary revision of the A.C.E. and the revised DA results.



Mr. Thompson said that future work would produce further revisions but that he did not expect dramatic modifications.

The issues described above were largely responsible for the executives' recommendation that the A.C.E. not be used to adjust census data at this point.

Both the A.C.E. and DA indicate that the differential undercount remains a serious problem. Following further research, he thought it would be possible to incorporate revised A.C.E. measures into survey controls and the intercensal estimates program.

Dr. Long explained that his staff had examined closely the population estimates derived from DA, paying particular attention to two of the components—fertility and immigration. For the past three decades, Census Bureau demographers have assumed an annual under-registration of births in the United States of about 0.8 percent. For DA purposes, this meant that about that percentage of births was not recorded and showed up in the DA as undercounted. However, the available evidence suggests that birth registration has improved over recent decades and that by the mid-1980s, birth registration in the United States was virtually complete.

In addition to fertility, the staff also reviewed the components of the data used to estimate the number of immigrants in the United States on Census Day 2000. The basic sources for legal immigration were registration or similar records from the U.S. Immigration and Naturalization Service. To estimate the number of undocumented immigrants in 2000, the Census Bureau relied initially on extrapolations from the 1990 census numbers. At the time of the initial adjustment decision in March 2001, the estimated number of immigrants in Census 2000 was 28.7 million. During the spring and summer of 2001, data from the Current Population Survey, the Census 2000 Supplementary Survey, and Census 2000 sample questionnaires were used to improve the estimate of the number of foreign-born people in the United States from 28.7 million to about 31 million. This change was a major factor in increasing the DA estimate of the population in 2000 from a base number of 279.6 million to the revised estimate of 281.8 million. Usually, a detailed analysis of the foreign-born population is not possible until about 3 years after the census because it requires data from the sample questionnaires. Since the agency was able to process and tabulate portions of the sample questionnaires earlier in time, analysts were able to use these data to inform the decision to use unadjusted census data for nonredistricting purposes.

Although Census 2000 contains a differential undercount, its magnitude is notably lower than in previous censuses.

Mr. Thompson pointed out that the evaluations of Census 2000 conducted thus far have confirmed that most census and A.C.E. operations were very accurate. While the evaluation program is ongoing, agency officials believe that analysis will confirm that Census 2000 made substantial progress in reducing the total net undercount and the net differential undercount.

In response to a question by Dr. O'Hare (American Statistical Association [ASA]), Mr. Thompson noted that the Census Bureau did not have differential counts for children yet, but will have them in the future. Dr. O'Hare said he suspected that a significant amount of the double counting in Census 2000 was due to the group quarters count and wondered if there was a way to determine who was missed in the group quarters operation. Mr. Thompson replied that much of the problem was in the household population, not in group quarters, and involved children and other population groups.

Dr. Belin (ASA) wondered if the agency had any comment on *The Washington Post* story quoting Rep. Miller (R-FL) as stating that it was time to retire adjustment because it appeared to be an unworkable technique to correct the census. Mr. Barron (U.S. Census Bureau) replied that the Census Bureau is always going to need a robust A.C.E. survey in order to make improvements from one census to the next. However, he also thought that the A.C.E. would not be able to be used to produce adjusted redistricting data because of time constraints and evaluation needs. Analyzing census data and the formal evaluations, and reaching a reasonable conclusion concerning the viability of adjusting those data within the time currently specified by law for providing redistricting data to the states, is impossible. Attempting to meet statutory deadlines has made it necessary for census professional staff to work very long hours for months at a time. Not only is this unfair to the staff; it also means the American people will have to rely on data that come from a stressful, error-prone environment. The Census Bureau is committed to producing accurate data. Agency staff will continue to analyze and evaluate the A.C.E. If the experts can improve the A.C.E. results, those results should be considered for use as population controls for Federal surveys and for intercensal population totals. The Congress should fund this research and should fund an A.C.E. for the 2010 census to allow for the same kind of rigorous evaluation of census coverage and quality that was accomplished for Census 2000.

#### 2002 Economic Census (AEA, AMA)

Dr. Knickerbocker (U.S. Census Bureau) said an economic census is taken every 5 years, and is the largest operation within the Census Bureau's Economic Directorate—collecting data from more than 22 million business locations in the United States. The economic census is the principal source of economic, business geography, industry, and product data. The establishments covered by the economic census account for 96 percent of the Gross Domestic Product and these data are the prime measure of economic activity within the United States. During the 6-year economic census cycle, approximately \$315 million is spent on census operations. Dr. Knickerbocker noted that approximately 1,600 data products were generated following the 1997 Economic Census.

Mr. Goldhirsch (U.S. Census Bureau) presented his paper, "2002 Economic Census," highlighting the numerous changes that are occurring in the 2002 Economic Census. In order to address many new and challenging economic issues, the Census Bureau has added new questions to the 2002 report forms for e-commerce, leased employees, and supply chain activities. In addition to these new items, a new product classification system and a revised industry classification system were jointly developed with Canada and Mexico. These changes have raised a number of issues related to how the Census Bureau disseminated its data products.

Dr. Swan (American Economic Association [AEA]) complimented the Census Bureau for its effort to improve the content and coverage of the economic census, especially within the services and information technology sectors. Politicians are interested in e-commerce sales by state, but the census does not provide these detailed data. He suggested that the agency try to distinguish between e-commerce purchases by consumers, businesses, and governments. If this is not possible for the 2002 Economic Census, it should be a consideration for 2007.

Regarding leased-employees, Dr. Swan said that the enormous jump in manufacturing productivity in the 1990s was probably a result of the inclusion of data for leased-employees. He believed that manufacturing productivity is currently overestimated and the services sector is probably being underestimated because of the classification of leased employees. Suppression of data on leased employees should not be a concern. It would be interesting to learn where there are

concentrations of leased employees. He suggested that in areas where suppression is an issue, leased employee data could be placed into the category for other “sourced employment.”

Dr. Swan postulated that many companies use leased employees as a “buffer” and these data are affected by the Nation’s economy. If data are collected during a recession, they are likely to be quite different than those collected during an economic boom.

He remarked that a comparison of telephony in the North American Industry Classification System (NAICS) and the North American Product Classification System (NAPCS) seemed to reveal similar data. He questioned if, using the telephony example, there would be any gain in collecting relatively similar data.

Dr. Swan noted that e-hosting is a rapidly developing and important aspect of the information technology sector for which data should be captured.

He reckoned that data on the estimated cost-savings from the use of a supply chain in comparison to a fully integrated environment would be useful. Many developments within the supply chain have been facilitated by technology. Data showing whether or not this technology resulted in cost savings would be interesting.

Dr. Swan said he would like to see data on how accurate data are when the economic census questionnaire is sent to an enterprise that must use establishment employment or payroll data.

He pointed out that many companies have personnel who have developed “expertise” in responding to the census and surveys. Although these employees understand the importance of their companies’ response, the upper levels of management may not appreciate the need for participation. Increased public relations may benefit the census’ response rates and foster an interest in participation.

Dr. Swan supported efforts that would enhance the publication of information technology data. He added that if increased data collection would create too much of a workload, it may be advisable to study dropping subordinate industries so as to collect data that are more pertinent to understanding the Nation’s economic activity.

Mr. Adams (American Marketing Association [AMA]) said that the content changes made to the economic census are more user-friendly for the marketing industry.

He observed that e-commerce data, including expanded geography, will be of great interest to the marketing community, and he was encouraged that outsourcing would receive increased attention as a result of expanded collection of supply chain data. He suggested that outsourcing data be based on a percent of an establishments’ volume.

Mr. Adams said the Standard Industry Classification was one of the more problematic aspects of economic census data in the past. The move to NAICS has made the data much more user-friendly for the marketing community.

He agreed with the Census Bureau’s recommended plans—to publish data on a national basis followed by geographic reports.

For 2007, Mr. Adams said that the marketing community would always like to see more product- and service-specific data. Although this would increase the data collection workload, he was uncertain if Dr. Swan's suggestion of removing some industries would be beneficial, especially to the marketing community.

In response to a question by Dr. Swan, Mr. Mesenbourg (U.S. Census Bureau) said that the Census Bureau has collected data on retail e-commerce since October 1999. Overall, retail e-commerce comprises just 1 percent of retail sales. In 1999, there was \$15 billion in retail e-commerce and in 2000, there was approximately \$27 billion, based on quarterly estimates. In 1999, online shipments for manufacturing totaled \$485 billion; for merchant wholesalers it was \$135 billion. As a result, e-commerce questions will be added to the 650 census questionnaires, most of which will be for nonretail trade establishments.

Mr. Mesenbourg said that the leased-employee data collected by the Census Bureau does not include information on temporary workers. Instead the data are for establishments that subcontract parts of their business to professional employer organizations. The latter file Internal Revenue Service Form 941 for these employees.

Dr. Knickerbocker pointed out that to date, the data collected by the Census Bureau on e-commerce transactions have been classified as retail trade. Revenues from four sectors of the economy are collected that are attributable to e-commerce transactions. In 2002, this collection activity will expand to all sectors of the economy, but the proportion of these transactions going to households, other businesses, governments, and overseas will not be collected. Mr. Mesenbourg added that, for the wholesale and retail sectors, class-of-customer data will also be collected at the gross level only. Establishments will not be asked to disaggregate e-commerce by class of customer.

Dr. Goolsbee (AEA) said that breaking e-commerce down by state for tax purposes would not be possible, because sales tax is applied according to the location of the consumer, not the producer. If these data were collected, it may simply provide data about which states have large concentrations of e-commerce establishments.

He noted that collection of outsourcing data has been lacking. He was encouraged by the Census Bureau's efforts to expand the collection of these data, and suggested that outsourcing data could be split between outsourcing to international and domestic entities.

Dr. Goolsbee said there did not seem to be enough "cross-tabulated" data in the geographic area series. For example, many states apply sales tax to business-to-business transactions. Theoretically, higher sales taxes should lead to less out-sourcing to avoid payment of sales tax on intermediate input transactions. Cross-tabulated data would be useful by general industry code, by state.

Dr. Etzel (AMA) said the term "supply chain" is a fairly dynamic notion. The activities associated with the Census Bureau's definition of "supply chain" are classic marketing activities. He noted that companies outsource any number of their activities, including sales forces, marketing and advertising, promotion, post-sales service, database management, billing, etc.

He was wary of Census Bureau plans to report data on leased-employees using "lots of caveats." The addition of caveats only serve to lessen the impression of data quality. The Census Bureau should publish data it is comfortable releasing without these caveats.

In reply to Dr. Greenstein's (AEA) query, Mr. Mesenbourg said the quality of supply-chain data was uncertain. The Census Bureau hopes to use these data to enhance its frames so it is known which establishments are outsourcing and what sorts of functions are moving within the supply chain. Afterwards, a more detailed focus of one or more industry supply chains may follow. He added that the initial supply chain data will serve as a benchmark for what functions are being performed at different levels of industry.

Dr. Greenstein said that having these data would permit researchers to determine what types of "back office" functions are being out-sourced. Industrial economists would be interested to know whether firms in some locations are disproportionately vertically integrated. Similarly, knowing the time-series history within industries would be useful, since such data are not readily available.

Mr. Mesenbourg said supply chain data also will be important to help the Census Bureau understand the measurement issues in existing surveys. This is the reason for several of the inventory questions being asked in 2002. These inquiries have not been asked of establishments in past censuses.

In response to a question by Dr. Pakes (AEA), Mr. Mesenbourg said that e-commerce data will begin to be linked with the 1999 Annual Surveys of Manufacturing, Retail Trade, and Services.

Dr. Pakes asked why the Census Bureau does not simply add a question to the 2002 Economic Census asking establishments when they started e-commerce activities. Mr. Mesenbourg said the content for the census has been finalized for all non-manufacturing census questionnaires. Furthermore, many establishments forward their surveys to accountants for completion. Accountants or other third parties may not know this information.

In response to a question by Dr. Browne (AEA), Mr. Goldhirsch said that leased employees differed from temporary employees in ways other than the length of their employment contracts. There are four data components differing the two classes of employees: (1) the amount workers are paid, (2) additional supplemental labor cost associated with the employees, (3) company overhead, and (4) profit. Companies that lease employees have these data and are able to determine employees pay and supplemental costs. Under a temporary employment arrangement, establishments receive a single bill from an agency, which lacks the details on the amount the employee is earning, supplemental costs, etc. Therefore, the data cannot be co-mingled.

In response to Dr. Pakes' question, Dr. Goldhirsch said that questions regarding leased employees would be incorporated into the annual surveys and all economic census questionnaires.

Dr. Knickerbocker emphasized that the collection of product data associated with service industries has been negligible. As a result of the development of the NAPCS, the 2002 Economic Census will greatly expand the availability of these data.

In response to a question by Dr. Knickerbocker, Mr. Zabelsky (U.S. Census Bureau) said that by using the NAPCS, the Census Bureau will be able to produce data on the output of a certain products across several industries. For example, past data collection on providers of basic

telephone service was confined to the establishments within the telephone industry. Using NAPCS, data also can be collected on telephone services provided by other establishments, such as cable network establishments.

In response to a question by Dr. Swan, Mr. Zabelsky said that there is an annual survey covering the telephone and cable industries. There is a history of collecting data from these industries that are fairly analogous to the NAPCS products. Changes to the product-line data collected could be performed on an annual basis if necessary. Unfortunately, product- and revenue-level data are currently not collected for most of the service industries; however, a basic measure of output is collected. To the extent that these industries may produce more than one type of product limits the value of the data currently collected.

Mr. Mesenbourg added that for the 2001 Annual Survey of Services, some of the NAPCS product detail will be added for the information sector. In 2002, inquiries regarding service products will be added to the questionnaires of about 65 of the 250 plus service industries. Collection of these data for all service sectors will require additional resources, which have been included in the agency's 2003 budget.

In response to a question by Dr. Pakes, Mr. Mesenbourg said the Census Bureau will be separating retail auctions from business-to-business markets. Business-to-business data will be found under the wholesale sector and business-to-consumer data will be in the retail sector. Class-of-customer data are available for both sectors.

#### Census 2000 Update (ASA, PAA)

Mr. Waite (U.S. Census Bureau) indicated that there are several non-adjustment issues related to Census 2000 to discuss. At the last meeting, the agency had just released redistricting numbers. Since then, the Census Bureau released the complete run of Summary File 1 (SF 1), which provides block-level counts for housing units, people, and group quarters; these figures are available on the Internet through the American FactFinder. The SF 1 file allows communities to better understand their redistricting numbers.

In releasing the SF 1 file, the Census Bureau found geocoding errors associated with the group quarters. In some cases, these units were coded in a different part of the town, or in a different town altogether. The actual number of errors was small, but this type of error can stand out. For instance, a town with a significant prison population would be able to spot if that institution were "moved" to a different town. People at the State Data Centers have been able to spot several of these errors, but the agency still needs the help of people at the local level who know their communities.

One controversial issue associated with the release of the SF 1 reports was the decision by the Census Bureau not to include data on the "sheltered" population, as had been planned. The agency has a long history of trying to count people in sheltered locations, but this population is difficult to count accurately. In the 1990 census, the agency conducted an operation called S-night (shelter night) in which enumerators attempted to count people on the street. The numbers were lower than advocates for the homeless were expecting, which led to a general debate over how well the Census Bureau had done in conducting this operation. In Census 2000, the agency decided to count the locations where the homeless go for services. The focus was on counting the shelters, soup kitchens, and other similar locations where services are provided. To calculate the number

of homeless who used the shelter, the agency used an "estimator" based partly on the number of nights per week that an individual spent at the shelter; the agency assigned weights according to the responses. A significant level of nonsampling error resulted because most people found at the shelters indicated that they had spent only one night at the shelter. Hence, there were insufficient data available to assign weighting properly. On the basis of these difficulties in determining accurate figures for the sheltered population, the Census Bureau decided to pull the report on this population from the general SF 1 release and committed to issuing those data independently with fuller explanations of the figures. The report is scheduled to be released by November 2001.

The release of Census 2000 long-form questionnaire data is proceeding on schedule. These data will be released later in spring or early in summer 2002 on a state-by-state basis. While some American Community Survey data, which are slated to replace long-form data, have been made public, no long-form data have been distributed widely. One internal exception is the estimates of the foreign born, which were taken from the long-form responses and used to evaluate the Accuracy and Coverage Evaluation. The Census Bureau soon will be releasing a tremendous amount of data in its SF 3 report, most of which will be completed in 2002. This report will provide the detailed data from Census 2000. While there are some issues with the data release in the SF 1 report, such as the geocoding problems with group quarters, the data overall are of a very high quality.

The agency also will review Census 2000 very carefully to identify what improvements can be made prior to the 2010 Census. The agency's goal is to count people once and in the right place. In trying to separate group quarters from housing units, the Census Bureau creates certain challenges for itself. For instance, at a prison the goal is to count the inmates as a group quarters population, but not the warden or other workers. Operationally it is difficult to separate the group quarters residents, who are supposed to be in the group quarters universe, from non-residents, who should be in the housing unit universe. For the 2010 Census, group quarters data need to be improved.

The Census Bureau also needs to address the problems associated with providing the public with multiple response opportunities for individuals and addresses. The more opportunities there are to respond, the greater chance that there will be duplication of records. The agency needs to be more vigilant in searching for technical solutions to resolve such instances of duplication. During Census 2000, if a name showed up on a block twice, the agency was able to resolve the case. However, the agency was unable to conduct nationwide matches. The agency was able to remove thousands of housing units that were duplicates, but much of this was done late in the process. The agency needs to find ways to spot and resolve duplication issues earlier.

The Census Bureau's residence rules also need to be modified. For instance, it is difficult to resolve instances where people have multiple addresses.

The other big question raised by the results from Census 2000 is how to get consistent responses to the race question, particularly since people are able to self identify. This is especially problematic if people can self identify in several different ways and change their response based on how a question is asked. The Census Bureau needs to study the issue further, particularly the category of "some other race." If the agency does not want people to select this "other" category, then it should not provide it as an option. The Census Bureau would like to be able to solicit consistent responses from people across all censuses and surveys, and through whatever response option is offered (e.g., telephone questionnaire assistance, "Be Counted" forms, etc.).

The current problem is that relatively minor differences in how people are approached on this question can yield dramatically different results. Hence, the agency needs to conduct further study of the issue in order to understand how to achieve the consistent results it wants from people.

Mr. Waite stated that the Census Bureau received several complaints following the 1990 census concerning geocoding errors and "lost" people who had responded due to processing errors. The agency tried to respond to the issue in 1990 and decided to have an active Count Question Resolution (CQR) program for Census 2000. The Census Bureau sent a letter to every government entity in the United States asking that local officials examine the agency's SF 1 data carefully in order to identify mistakes and notify the agency of the error. For errors that are verified by the Census Bureau, the agency will send documentation that the local government can use for official purposes.

Mr. Rinaldi (Census Bureau) indicated that the CQR program started in June 2001 and will run through September 2003. The public can raise several types of processing problems through this program, including boundary disputes, geocoding errors, housing unit challenges, and group quarters challenges. In cases where such errors are verified, the agency will make corrections; however, for every "winning" government that successfully has its population adjusted upward once an error has been resolved, there will be a corresponding "losing" government that will have its population revised downward.

The CQR program is not designed to challenge the decision about whether to release adjusted Census 2000 data, and will not revise any numbers from the census that were sent to the President for reapportionment. CQR results also will not be reflected in Census Bureau products, e.g. SF 1.

Prior to the start of CQR, the Census Bureau was running a Count Resolution program through March 2001. Internal divisions (Decennial Systems Contract Management Office, Population, Geography, Field) were given the opportunity to identify processing errors in the data from Census 2000. These internal cases were submitted for CQR. There also are external cases that local, state, and tribal governments have identified for the Census Bureau. For both internal and external cases, the agency assigns a case number and assigns it to a division for research. Cases with inadequate information are followed up by phone. About 60-80 people among the various divisions and processing centers are assigned to CQR research and each division handles specific types of cases. The National Processing Center (NPC) in Jeffersonville, IN, handles all boundary disputes, Population Division handles "special places," group quarters, and pulling census records, while Field Division and the regional offices review the Topologically Integrated Geographic Encoding and Referencing (TIGER) and Master Address File (MAF) cases and also census records from the processing office.

All of the registers and other information sources that are necessary to resolve CQR cases are being sorted at the NPC. Everything is broken down for each local census office down to the assignment area. This is a very involved process and the research results are being documented very carefully.

The Decennial Management Division reviews the research results for completeness and accuracy and approves the results. Following the research, a response is provided to the government that identified the potential error. In cases that do not result in any boundary or numeric change, the



agency sends a letter to the local government that initiated the CQR in order to explain and document the decision. Likewise, CQR cases that are upheld and validated are carefully documented and the research results of the inquiry are sent in a letter to the initiating government.

Once the research results letter is sent out, the agency follows a process that is very similar to the process that was followed during the census. The agency creates a CQR change file which goes through the same process that census data did. It is a process that can take several days or weeks as it involves having Geography and Field Divisions update the MAF and TIGER, having the Decennial Systems Contracts Management Office update block counts for housing units, group quarters, and individuals, and having Population Division recertify the new counts. This is why there is a significant lag between the initial certification and the time that the updates are finalized. After all of this, a certification letter with the revised counts is signed and sent by the Census Bureau Director for use by the local government that initiated the CQR case in question. Between 2 and 4 weeks after that, the American FactFinder errata should reflect the changes made as a result of the CQR case. The agency is careful to ensure that the American FactFinder updates do not appear before the local government that initiated the CQR receives its notification letter.

Currently there are 594 internally generated CQR cases and 112 generated by external entities. The internal review includes cases generated both by Census Bureau employees and by selected external partners, including the State Data Centers. These cases do not reflect all of the CQR correspondence that the agency has received; they only reflect the number of cases that have been assigned for research. Letters that do not contain enough information to warrant action are followed up in order to secure enough detailed information to assign them for research.

The CQR is running about 2-3 weeks behind schedule as a result of the terrorist attacks of September 11. All of the 706 cases, however, have been assigned for research and the results are beginning to come in.

In response to a question from Dr. O'Hare (American Statistical Association [ASA]), Mr. Waite explained that the Census Bureau can provide the number of group quarters residents in a specific block, but does not provide the names of group quarters or the number of residents at each. If an individual were familiar with a given block and if there is only one group residence on that block, then it would be possible to isolate the population in that residence.

Local governments can compare their data on group quarters to the census results for each block. If there is a discrepancy, the local government can submit a CQR to see if the Census Bureau made some sort of processing error that moved the population of a group quarters from one block to another. The CQR process can resolve these discrepancies. However, enumeration errors, e.g., missing a group quarters altogether, cannot be resolved via CQR as there is no field component to the CQR program that provides for reenumeration of such cases.

Mr. Waite said that he was surprised by the low number of CQR challenges received so far. Considering that there are 39,000 governmental units in the United States, having roughly 700 CQR cases is fairly modest.

Responding to a question from Dr. O'Hare, Mr. Waite confirmed that external CQR challenges must come from governmental units or their designated representative.

Dr. O'Hare asked why group quarters are not identified by name. Mr. Waite responded that many of these quarters are very small and there would be confidentiality problems if they were identified by name, particularly as the SF 1 file contains characteristics as well as counts.

Dr. O'Hare commented that the CQR sounds reactive rather than proactive. Mr. Waite stated that the internal review is an active attempt to identify processing errors. However, it is extremely useful to have local governments review the data as well, since they are more familiar with their communities and can identify not only problems, but also potential explanations for why the problem exists. Mr. Rinaldi added that many of the external cases actually are duplicates of cases submitted by internal reviewers.

Dr. Stanley Smith (Population Association of America [PAA]) suggested that the Census Bureau consider releasing the names of larger facilities, such as state prisons, since confidentiality would not be an issue in these instances; in some cases a prison's population is larger than that for a small town. Releasing such names would make spotting geocoding and other types of errors much easier. The agency could use data suppression methods while still providing the name of the large group quarter. Mr. Waite stated that the Census Bureau would consider this suggestion for the future. The agency tried to anticipate problems for Census 2000 and prevent them. While the CQR process does not change the apportionment numbers or the agency's data products, it does provide local communities with revised counts that can be used for funding and other official purposes.

Mr. Rinaldi, responding to a question from Dr. Stanley Smith, stated that the internal cases were reviewed carefully. Also, broad analysis of tracts that were dramatically larger or smaller than they were in 1990 have been assigned for analysis. The agency is doing all that it can with the information provided for each CQR case.

Dr. Stanley Smith recalled that the corrected data in 1990 had only population and housing units at the governmental level. For Census 2000, he asked, would it be possible also to provide data for households and population-in-households at the block level? Mr. Rinaldi responded that the agency is trying to tell local governments what units are being moved in response to CQR-initiated changes, but it is not providing data on population and housing counts down to the block level. The American FactFinder corrections will be similar to the corrections printed from the 1990 Census, as they will list only total housing units and population counts at the governmental unit. Dr. Stanley Smith asked whether it would be possible to determine occupancy rates from the housing data. Mr. Waite responded that the agency does not plan to do so, but will look into the possibility.

Responding to Dr. Denton (PAA), Mr. Waite stated that the adjustments based on CQR results will not affect a large number of people. In most cases the changes are very modest as they involve very few people or units. However, these changes are significant to the local governmental units as even small changes can affect funding in a dramatic way for a small community.

Dr. Lee (PAA) asked why the agency would not be adjusting its publications to reflect the corrections from CQR. Mr. Waite explained that making such changes to a data product is a very complex and involved process; it is more than just changing the number in one column. However, the agency can provide errata. Responding to another question from Dr. Lee, Mr. Waite said that because the shelter population is very sparse, release of local data is difficult. Those interested in

these data probably will be disappointed that they will not be available at a very low geographic level.

Dr. Ghosh (ASA) asked whether the census and the American Community Survey could use similar residence rules so that the data among the agency's products would be more comparable. Mr. Waite responded that since the American Community Survey collects data on a monthly basis it cannot use the existing census residency rules. This does raise the question of whether the agency has the right residency rules for either the census or the American Community Survey. Changing the rules will change the data. It may not be feasible to eliminate the differences in the residency rules. However, the agency should conduct research so that it might be better able to understand the discrepancies. This is a significant challenge for the agency. Applying census residency rules to the American Community Survey probably would not work very well.

### American Community Survey and Economic Analysis (AEA)

Mr. Navarro (U.S. Census Bureau) said that the Census Bureau would appreciate advice from the American Economic Association (AEA) subgroup regarding the American Community Survey. He referred the subgroup members to a handout listing the characteristics derived from the questions on the Census 2000 long-form questionnaire, pointed out the economic and financial characteristics, and said that the survey questionnaire contained the same questions as the decennial census long form.

The decennial census has two parts. The basic census contacts all dwelling units, counts the number of residents and provides data on age, sex, race, and Hispanic origin, and a few other variables. A sample of about one-sixth of all dwelling units receives a "long form," collecting a much longer list of demographic, economic, and housing variables. This long-form sample is the important source of information about the general characteristics of the population below the national level.

The American Community Survey is the Census Bureau's proposed new way to collect "long-form" information, measuring these characteristics continuously throughout the decade starting in 2003. This survey will regularly update the "snapshot" of communities that the census gives, and will produce a time series that will measure changes over time. The survey, like the census long form, covers a variety of topics that are mandated or required by Federal law.

Replacing the census long form with the American Community Survey is part of a plan to re-engineer the 2010 census. The other components of the plan are a program to modernize the Census Bureau's Master Address File (MAF) and Topologically Integrated Geographic Encoding and Referencing (TIGER) System database, along with early planning and testing to take advantage of the opportunities provided by these other changes to simplify and improve the census.

Testing of the American Community Survey methods began with 4 demonstration sites in 1996 and will conclude with 31 sites at the end of 2002. Full implementation of the survey will begin in 2003 and will consist of an annual sample size of 3 million addresses, which is an average sampling rate of about 2.5 percent, in all parts of all counties and American Indian Reservations. Each month, there will be a separate panel of 250,000 addresses, with no address repeating in the sample for at least 5 years. As with the census long-form sample, there will be a higher sampling rate in small governmental units, with a somewhat lower rate in large census tracts.

Each year the American Community Survey sample addresses will be selected from the MAF, and mailed out in 12 monthly panels. Data collection for each monthly panel extends over a 3-month period, with telephone follow-up in the second month for addresses where a telephone number can be obtained, and personal-visit follow-up for a one-third subsample of the remaining nonrespondents. For units with no usable mailing address, a two-thirds subsample is sent straight to personal visit.

The survey questionnaire asks for the characteristics of the residents of the unit as of the time of the interview. Anyone who is currently living or staying at the unit is included as a resident. Unlike the census, people who live somewhere else most of the time are included if they are staying at the unit for more than 2 months.

The survey will produce a variety of annual and multi-year data products, for different purposes and includes both summary files and tables as well as public-use microdata samples. The survey data product that most directly will replace the long-form summary data will be a series of 5-year moving averages for all sizes of geographic areas. These will start in 2008 with the 2003-2007 average, and will be updated each year thereafter. The American Community Survey is designed for annual, rather than monthly, estimates because—

- ! Monthly samples are not sufficiently representative.
- ! The survey must provide some information on seasonal patterns.
- ! The survey cannot replace monthly surveys.
- ! The survey data will be useful in small-area modeling.

The American Community Survey data are weighted to adjust for differential probabilities of selection, and to adjust for other known differences between the interviewed sample and the population. The approaches used are similar to those used by other surveys, including the census long form. The weighting factors with the greatest impact are the ones that adjust for differences in selection probabilities, in particular for the oversampling of small governmental units for the 1-in-3 subsampling of nonrespondents, and for the 2-in-3 subsampling of unmailable addresses.

The other important factors are those that control the survey estimates to agree with intercensal demographic estimates by age, sex, race, and Hispanic origin. These intercensal estimates are produced by updating the previous census results using vital records and other administrative records, as part of a well-established federal/state cooperative program. The estimates are available at the county level and the Census Bureau plans to control the survey at that level, and possibly for some larger places within counties.

Data users familiar with the census long form have long wondered whether the familiar decennial “snapshot” could be replaced adequately by a series of somewhat noisier annual estimates, which have to be cumulated into multiyear averages to achieve a precision comparable to the decennial estimate. The Census Bureau’s basic argument in favor of the rolling sample has been that for characteristics that are stable, or changing slowly, using the average over the previous 5 years will be similar to using a large single-year sample in the third year of the 5-year period. Since long-form data takes between 2 and 3 years to be released, the 5-year average is roughly comparable in timing to newly released long-form data. When there is a dramatic change in an area, having an

annual time series is especially valuable, especially when compared to having data only 1 year in 10.

In the latter situation, a satisfactory analysis may require supplementing the 5-year averages with an analysis of single-year data, which will be possible with the American Community Survey, since single-year data will be available even for areas below the normal publication thresholds. One potential area of development for the survey is how to alert users of the 5-year averages to unusual variation in the annual numbers and to display this variation in a way that is helpful in interpreting the 5-year average. In short, the Census Bureau has yet to encounter an application for which a decennial snapshot of population characteristics is clearly preferable, and there are many where the survey is clearly preferable.

In conclusion, the Census Bureau has three questions for the AEA subgroup—

- ! Can the subgroup suggest improvements to the agency's plans for data products?
- ! What are the subgroup's recommendations for handling the "usual" and "current" residence rule?
- ! What concerns and opportunities does the subgroup see for using American Community Survey data in economic analysis and modeling?

Dr. Maynard commended both the presentation and the working paper for being highly informative and answering many of the subgroup's questions regarding the American Community Survey. As for the Census Bureau's first question about the survey's data products, releasing the 3- and 5-year data together with the 1-year data would serve to illustrate the amount of variability in the data overall. Also, information on the monthly interview numbers would be a valuable tool for understanding the data. Modal differences, such as data obtained by mail, telephone follow-up, or personal visit would be useful as well.

Regarding the "place of residence" question, the agency's decision to use the current residence measure is appropriate, since the information presented over time needs to be represented as moving-average data. As for the question about economic analysis and modeling, the AEA subgroup can provide extensive input on these topics. One possibility might be to use the American Community Survey to supplement or support the agency's longitudinal surveys, such as the Survey of Income and Program Participation (SIPP), by adding a small series of questions to these surveys. In addition to the three questions asked by the Census Bureau, another question or issue to explore may be the agency's focus on the under-representation of minority race and ethnic groups in its surveys. Perhaps the focus should be on those living below the poverty level instead.

In response to a question by Dr. Pakes regarding how the Census Bureau selects and follows the survey's rolling sample, Mr. Navarro said that agency first selects its sample for the entire year, then for the first month of the survey, a panel (or "piece") containing one twelfth of the annual sample is selected. So, in each year the entire sample is split over 12 consecutive pieces.

In reply to followup questions by Drs. Pakes, Goolsbee, and Maynard regarding response rates, Mr. Navarro said the weighted response rate for the American Community Survey mailout is about 97 percent and the final unweighted response rate is about 60 percent. In the first month, the

Census Bureau mails out one-twelfth of the annual sample. In the second month the agency conducts its Computer Assisted Telephone Interview (CATI) operation for those households (for which the agency has telephone numbers) which did not return questionnaires. In the third month, the Census Bureau selects a one-in-three sample of the remaining nonrespondents for a personal visit, or a Computer Assisted Personal Interview (CAPI). Those cases that are enumerated in the third month through the CAPI operation are weighted up by three in order to represent the total population.

Mr. Bryson (U.S. Census Bureau) added that the unweighted mail-response rate varies greatly by geographical area. In some very difficult-to-enumerate areas, the mail response rate is only about 30 percent, and the agency has difficulty with its telephone follow-up in those areas as well. So, in a hard-to-enumerate area, the Census Bureau has to do a considerable amount of CAPI follow-up. In other areas, the agency gets a 70-percent mail response, so the average is probably around 60 percent. The Census Bureau picks up another 10 percent from its telephone follow-up. On the average, about 30 percent remains for the one-in-three subsampling for CAPI follow-up.

Mr. Navarro responded to some of the subgroup's earlier comments. First, regarding the importance of releasing annual estimates for small areas as part of a time series to allow users to assess sudden changes in demographic or economic data, the Census Bureau is planning to make these data available, but these statistics will not be part of the agency's standard data products. Such data most likely will be very "noisy," since they will be based on a 2.5-percent sample. Nevertheless, the agency feels the data are worthwhile, since they will allow users to conduct full assessments of the 5-year estimates. The process for making these data available is not finalized, and the data probably will be released in a Statistical Analysis System (SAS) format on the Internet.

As for the monthly interview data in the Public Use Microdata Sample (PUMS), the mode of interview will not always reveal the interview month because the agency sometimes receives its mail returns in the second or third month.

Also, regarding the possibility of using the American Community Survey as a replacement for other surveys, while the Census Bureau may provide this option, it will not be advertised widely. Dr. Weinberg (U.S. Bureau) added that the survey could be extremely helpful as a screening tool. If someone currently wants to do an immunization survey of children of 2-3 years, they will need a rather large sample. Clearly, the American Community Survey presents the possibility of conducting this type of survey in a much more efficient manner. So, this potential has to be considered in the context of the entire Federal statistical system. Unfortunately, the American Community Survey must be funded before any of these possibilities can be considered.

Dr. Goolsbee suggested that the Census Bureau add supplemental questions to the American Community Survey as it already does for the Current Population Survey. One possibility might be an children's immunization supplement taken over a 3-month period. The Census Bureau then would be able to provide survey supplements for other governmental agencies, and the agency could market this capability by stating that once the survey infrastructure is in place, it would not be that costly to add additional questions later. Mr. Tupek (U.S. Census Bureau) said that the Census Bureau is considering the issue of supplementation. Approximately a year and a half ago, an interagency committee was established to look into the potential uses of the American Community Survey, what the survey's content should be, what kind of follow-on surveys and supplements might be possible, and what kind of rules were needed to establish priorities for handling these requests.

Dr. Maynard noted that some of the Census 2000 questions, along with their American Community Survey counterparts, no longer seemed relevant and wondered whether they really were mandated by Congress or required by law. Also, she asked if there is a mechanism for changing outdated questionnaire items.

Dr. Weinberg agreed that some of the questions may no longer be required by Federal law or should be superceded by other requirements. The mechanism for changing questionnaire items is an interagency committee headed by the Office of Management and Budget (OMB), but Congress gives the final approval concerning which items appear on the questionnaire, and they have indicated that the American Community Survey questionnaire should be shorter than the Census 2000 long form. So, if the Census Bureau wants to add questions, such as one dealing with health insurance, other items must be removed from the questionnaire.

Dr. Pakes expressed concern that the Census Bureau is missing 40 percent of the households in the first stage of the American Community Survey and 20 percent in the second stage. He doubted that the remaining 30 percent represent a random sample of the general population. Mr. Navarro calculated that only about 5-to-10 percent of the survey's nonrespondents are different from the rest of the population. The Census Bureau applies a non-interview adjustment that assumes that this group of nonrespondents has the same characteristics as the respondents, which introduces a bias into the estimate. The agency, however, is developing a sampling plan for the American Community Survey to target areas with low response rates. Areas having response rates of less than 40 percent may be sampled at two-in-three, rather than one-in-three households, which would increase the reliability of the survey's estimates.

In response to a question by Dr. Maynard, Mr. Tupek said the reason the telephone response rates for the American Community Survey are so low is that the Census Bureau is unable to obtain telephone numbers for a large majority of nonresponding households. The agency relies on companies with reverse telephone directories, but the ratio of telephone numbers to household addresses is low. The response rates for the numbers actually called, however, is high.

In reply to a question by Dr. Pakes, Mr. Tupek said that the Census Bureau now has an American Community Survey evaluation program, from which one report already has been produced and seven more should be available within another year. These reports will provide information on other characteristics besides race and ethnicity down to the block level for areas that are primarily Hispanic, African American, etc. The reports will enable statisticians to look at response rates for those blocks and compare them to response rates for other blocks.

In response to a question by Dr. Brown, Mr. Navarro said that the quality of the American Community Survey estimates is, in part, a function of the intercensal population estimates. If the Census Bureau does not get good administrative information on immigration, for example, then its population estimates will not be accurate, and those estimates are the population controls that will be used to calibrate the American Community Survey data. For this reason, the agency is devoting considerable resources to improving the quality of the its population estimates.

Dr. Pakes said that economists are likely to use the American Community Survey to develop models based on their own models of individual activity (what an individual does, buys, is employed, etc.), and aggregate up to the survey aggregates. So, it would be useful for these economists to have data on characteristics as well; for example, the percentage of people who have income, housing, or education above a given level.

## 2010 Census Planning—Next Steps (ASA, PAA, AMA)

Mr. Waite (U.S. Census Bureau) said that planning for the 2010 Census needs to be different than planning for Census 2000 in order to meet four principal goals—reduced risk, improved quality, increased relevance, and contained costs. Census 2000 was a great success, despite the significant number of risk factors that were identified in General Accounting Office (GAO) reports. While the Census Bureau avoided the dire consequences that were outlined in those reports and conducted a very successful census, the agency was very fortunate that everything turned out as well as it did, considering the many obstacles that it faced. For instance, 2 weeks before the data capture operation started, the agency was uncertain that its data capture system would work.

There were six major risks associated with Census 2000. These were—

- ! Lack of early planning.
- ! Too much emphasis on “what” operations would be added and not enough on “how” to incorporate these innovations.
- ! Failure to arrive at a consensus design, which increased the cost of the census.
- ! Lack of a real dress rehearsal. This was based on the agency’s inability to arrive at a consensus design; since many new operations were tested during the dress rehearsal, those operations that did not go as planned were subject to fixes that could not be tested prior to the census. In essence, this turned the census itself into a test of these fixes. The census should not be used as a test in this manner.
- ! Failure to control late requirements change.
- ! A census design that was too complicated.

The data quality from Census 2000 appears to be very high, but it could have been better. In order to further improve data quality, the agency needs to resolve instances of duplication more effectively. The agency needs to improve the way it handles group quarters and special places. It also needs to use more targeting, much of which will be better by 2010 due to the American Community Survey. The American Community Survey will provide more timely data that can be used for targeting particular populations; data from the prior decennial census are too old to be of use for this purpose.

Since most of the costs associated with conducting a decennial census are generated by field operations, so it stands to reason that this is the first place to look for opportunities to contain costs. In 2010, there needs to be reduced reliance on paper forms and the volume of paper. This will allow a census that requires fewer people in the field to handle that paper, which in turn will reduce the amount of office space needed and the “footprint” and “throughput” for the data capture operations. Another method to reduce the volume of paper will be to push for an effective mobile computing device for use in nonresponse follow-up.

If one looks at a chart of the traditional budget flow to the Census Bureau over a decennial census cycle, one would conclude that the job requires little preparation, or lead time, or that conducting a census is fairly routine and only requires a great deal of money in order to run smoothly. All of



these conclusions are wrong. The funds flow pattern is reflected in the advice flow pattern; most of the advice about how to conduct the census comes at the end of the cycle and provides too little lead time before census operations begin to allow innovative ideas and operations to be tested effectively.

Mr. Waite proposed a new model for how advice and funding should flow to the Census Bureau in order to ensure that planning for the 2010 Census is effective. More of the funding and advice should reach the agency earlier in the decennial cycle. Better planning and funding up front and earlier testing will allow the agency to realize a significant amount of operational savings because the operations will be more firmly established and will be more efficient.

The 2010 Census will benefit from the fact that the long-form questionnaire will be separated from the short-form questionnaire and replaced by the American Community Survey. Because of this one significant change, the Census Bureau will no longer need to maintain separate edits, capture procedures, and files for the short forms and long forms. Since everyone will receive the same questionnaire, there will no longer be a need to develop a sample from the population that will receive a long form. These complicating factors will be removed.

The American Community Survey will benefit Census 2010 planning in other significant ways. For one, it will allow more timely and relevant data annually. This will provide for greater targeting which will improve the quality of the census while reducing costs. In addition, the volume of paper required during the census will decline; for Census 2000 half of the 1.5 billion sheets of paper that were processed through data capture were from long forms, even though only about 1-in-6 cases were long forms. With less paper to process, the data capture process will be faster and cheaper. The agency will be able to eliminate one data capture center and reduce the "footprint" of the remaining sites.

By having a short-form questionnaire with only six or seven questions, there will be a greater opportunity to have the instructions printed in more languages on the same page. This will reduce the need for telephone questionnaire assistance. Also, if there is only a short form, it might be possible to develop a targeted second mailing, which would improve response rates.

Mr. Waite suggested that nonresponse follow-up could be performed more effectively if enumerators were to use a mobile computing device that included an electronic map and a short form questionnaire that could capture respondents' data electronically. Doing so would require fewer support and processing staff at the local census offices. The current Master Address File/Topologically Integrated Geographic Encoding and Referencing (MAF/TIGER) system is very good, but is not compatible with the global positioning system (GPS). By 2010, MAF/TIGER must be GPS compatible. Further, the database for MAF/TIGER is very good, but is written in a specialized computer language, rather than one that is widely used and compatible with other systems. Also, there are too few programmers that know how to work with the current system. The Census Bureau needs to have its databases written in a modern programming language.

The Census Bureau hired thousands of enumerators during Census 2000 that performed redundant work. After the cutoff date for nonresponse followup the public continued to send in completed forms. Since the data capture system could not incorporate these forms quickly enough and update the nonresponse follow-up files accordingly, many people were visited during this operation that already had returned their questionnaires. In 2010, the system should be updated automatically as completed questionnaires arrive. Having a system that can be updated

electronically on a continuous basis will reduce the incidence of unnecessary nonresponse-followup interviews. All of this depends on having a MAF/TIGER system that is GPS compatible and that can communicate with the mobile computing devices carried by enumerators.

For the 2010 Census, the Census Bureau needs to simplify its operations, reduce field costs, focus on counting everyone only once, and integrate its computer operations. The agency has several very good systems that cannot communicate amongst themselves.

To achieve a better census, the Census Bureau needs an honest assessment of its performance in Census 2000. The agency needs decisions based on data, innovative decisions, and extensive pretesting of its plans. It also needs the self discipline to avoid the temptation of last minute panic decisions. For instance, during Census 2000 there was a last minute decision to add an option to request a foreign language form to the advanced letter. While this was a good theoretical idea, doing so nearly proved disastrous because of a "leading 1" that was added to each address. Had the extraneous digit been in the barcode instead of the address, delivery would have been impossible. Meanwhile, the data capture system was tested before the census, which allowed the agency to compensate for the dust from the questionnaires that was clogging up the scanners. This example demonstrates the value of early testing.

In reviewing Census 2000, the Census Bureau needs to evaluate what worked, what did not work, and why particular operations succeeded or failed. The agency is beginning this process by performing internal assessments and evaluations, and by soliciting external advice. The agency is evaluating—

- ! Response rates and behavior analysis.
- ! Content/data capture.
- ! Partnership and marketing.
- ! Special populations.
- ! Address list development.
- ! Field recruitment and management.
- ! Field operations.
- ! Coverage improvement.
- ! Ethnographic studies.
- ! Data capture.
- ! Processing systems.
- ! Quality assurance.
- ! Accuracy and Coverage Evaluation.

The major changes to operations include—

- ! Mobile computing device.
- ! Nonresponse follow-up.
- ! Data capture.
- ! Field infrastructure.
- ! More and better targeting.
- ! Better operational integration.

Special areas of focus include—

- ! Race. The Census Bureau needs to figure out how to get consistent answers to this question from the public. The agency also needs to do some work on related issues including the level of detail, how to handle multiple-race responses, and how to handle “some other race” responses.
- ! Special places and group quarters. The Census Bureau needs better definitions, better strategy, and improved implementation.
- ! Overseas enumeration. The agency needs to determine who should be counted, how to count them, and why overseas Americans should be counted. If an American has been living overseas for a significant number of years, is there a point to counting them and apportioning them back to the last place they lived?
- ! Expanded use of targeting. If the agency has data, it can be more efficient in targeting particular activities.
- ! Expanded response options. This should continue, particularly Internet response, kiosks, and Be Counted forms. There also need to be ways to identify when these expanded response options duplicate other responses from the same individuals.
- ! Use of language. Having only a short form will allow the potential to expand the language program.
- ! Unduplication. In addition to housing unit unduplication, the agency needs operations to unduplicate individuals. The agency also needs to revisit the Primary Sampling Algorithm, the Be Counted program, and other coverage enhancements.

The Census Bureau needs to integrate its computer software since there were too many automated systems used during Census 2000 that could not communicate with each other.

The census test scheduled for 2004 will test methodology, the mobile computing device, and other methodological aspects. In 2006 the Census Bureau will run a systems test to see how well its systems are integrated. In 2008 the agency will conduct a "real" dress rehearsal of census operations that the agency believes it will use during the 2010 Census. Mr. Waite said he expects only minor changes in response to the dress rehearsal, as the dress rehearsal would be very close to what the agency plans to do in 2010.

The Census Bureau has set up a number of research groups and would like to have a preliminary report from those groups for the Committee to examine for the next Census Advisory Committee meeting to see if the agency's planning is heading in the right direction. The groups will study—

- ! Special places/group quarters.
- ! Self response options.
- ! Software and systems.
- ! Coverage.
- ! Field enumeration.
- ! Enumeration of Americans living overseas.
- ! Language program.
- ! American Indians and Alaskan Natives.
- ! Marketing, partnership, and advertising.
- ! Content.

The Census Bureau's first test in preparation of the 2010 Census, scheduled for 2004, will cover—

- ! Contact strategies. How will the agency let people know the census is coming and how will it encourage them to answer?
- ! Mobile computing devices. The agency will send enumerators with these devices into an area that has its MAF/TIGER records linked to GPS in order to determine what challenges the agency faces when using these devices in the field.
- ! Nonresponse follow-up.
- ! Special places/group quarters.
- ! Master Address File.
- ! Language program.
- ! Coverage improvement.

- ! Questionnaire content.
- ! Residence rules.
- ! Overseas enumeration. The best options for this will be either administrative records or some version of the Be Counted form.
- ! Promotion and marketing.
- ! Software development practices.

Mr. Waite stated that while Census 2000 is the best on record, he would like the 2010 Census to be even better.

Dr. Belin (American Statistical Association [ASA]) said that the Census Bureau's concern about the problems associated with unduplicating responses from Be Counted forms, kiosks, and other alternative response options is well placed. However, these options, particularly Internet response, will need to be maintained and expanded, in part for public relations purposes. Mr. Waite concurred, stating that since the agency must maintain these options, it may as well be prepared to handle these operations well. The agency needs to put serious thought into the issue of unduplication from these alternative sources. Dr. Belin noted that the complexity of Census 2000 may, in part, be a function of time. In some ways, complexity can be a healthy thing, as in the case of adding the American Community Survey. While doing so made Census 2000 more complex, the potential rewards make the effort worthwhile. Mr. Waite concurred, but noted that complexities need to be anticipated and addressed early in the process to improve the odds that they will be handled in an orderly manner.

Dr. Haas (American Marketing Association [AMA]) was gratified to see the Census Bureau attempting to do some pre-planning with regard to important and complex issues, such as race. He noted that marketers generally use multiple information sources and asked how the agency plans to communicate with other organizations that develop their own related data sources. Mr. Waite indicated that the agency tries to reach out and maintain contact with outside agencies and organizations. For instance, the agency went outside the Census Bureau in advance of Census 2000 when it was looking for expertise on how to conduct data capture using optical scanning. This is one instance that illustrates the importance of a wide array of contacts and communication. Dr. Haas stated that on some issues the Census Bureau is at the leading edge and needs to communicate what it is doing to others who will be following the agency on particular issues. Mr. Waite indicated that the Office of Management and Budget (OMB) is responsible for integrating governmental agencies to ensure consistency. Mr. Waite reiterated that the Census Bureau needs to reach out to private companies and organizations for advice early in the census planning process.

Dr. O'Hare (ASA) endorsed the Census Bureau's effort to conduct early planning and its attempt to flatten out the budget cycle. However, Census 2000, which experienced late funding and advice, was the best census ever. Is it possible to convince Congress that a major change in the funding cycle is necessary? Mr. Waite conceded that the agency's efforts in this matter may fail. However, he plans to make the case that the new funding model will save a great deal of taxpayer money. Census 2000 succeeded, but did so in large part due to luck that nothing major went wrong. It was a very risky, expensive, and stressful operation and should not be repeated. The

Census Bureau will make the case for the new funding and planning cycle, but in the end it is Congress' decision. The bottom line, however, is that without early planning, the process will not work. Early planning is vital to reducing operational risk and cost, while increasing data relevance and quality. The total cost of the projected new design is less than if the Census 2000 design were repeated, and the country would get the annual American Community Survey data, an updated MAF/TIGER system that is linked to GPS, and a higher-quality census thrown in "for free."

In response to a question from Dr. Stan Smith (Population Association of America [PAA]), Mr. Waite stated that it would be desirable to have consistent residence rules for the census and the American Community Survey. However, this will be difficult if both keep their current rules. Right now it is difficult to see how to make both sets of residency rules compatible.

Dr. Etzel (AMA) asked how the agency plans to maintain consistency between the American Community Survey data and past long-form census data. It seems that there will be a great temptation to tinker with the questions on the American Community Survey, which also will threaten the Census Bureau's ability to maintain consistent data over time. Since the American Community Survey depends on multiple-year estimates, having consistency is vital to securing small-area data. Mr. Waite concurred that the American Community Survey needs to be "held still" for long periods of time to ensure quality tract-level data and time series. The agency will push for stability for the methodology and content.

Mr. Waite agreed with Dr. Etzel that if there should be few, if any, changes allowed on American Community Survey questions, there will be a great temptation to add questions, which will make the long form into a "longer and longer" form.

In response to a question from Dr. Ghosh (ASA), Mr. Waite stated that the 5-year averages from the American Community Survey will produce better, more reliable data at low levels of geography than the current long-form questionnaire. There will be better trained professional enumerators which will ensure a higher level of consistency and productivity. Under the current system prospective employees simply have to demonstrate that they are breathing in order to become an enumerator, and they only receive 3 days of training. The key to maintaining quality will be for the professionals at the Census Bureau to maintain some consistency and discipline. The real value of the American Community Survey is that if its content can be maintained for a sufficient period of time, it will produce high-quality, annually-updated data at low levels of geography.

Mr. Adams (AMA) endorsed the Census Bureau's efforts to improve on Census 2000. In order to maintain consistency the agency's research groups most likely will focus on incremental changes and improvement. While this is appropriate, the agency also should consider devoting some funding to a "white sheet research group" that would be free to explore the potential of more dramatic changes. The agency needs to maintain consistency, but should not do so at the expense of creativity. Mr. Waite concurred that creativity is valuable, but there needs to be a great deal of thought devoted to "how" creative ideas can be translated into practical programs and operations.

#### E-Business Infrastructure (AEA)

Mr. Gates (U.S. Census Bureau) said the Census Bureau has initiated a measurements program to address data gaps associated with the new economy. The agency already has produced estimates of e-commerce and e-business processes used in manufacturing, and believes the next step should

be to look at measuring e-infrastructure. Mr. Gates added that, while this could involve government as well as private e-business infrastructure, his comments will concentrate on private e-business infrastructure.

E-business infrastructure includes hardware and software, human capital, and telecommunications networks. A major issue is the boundaries of this field; where should the line be drawn regarding what does and does not constitute the infrastructure for e-business? Discussions within the Census Bureau have tentatively concluded that machines attached to networks are not necessarily included, and only the core part of "human capital" associated with administering a network should be considered part of the infrastructure.

There are several ways to try to measure infrastructure; the Census Bureau could try to define the kinds of investments needed to create the infrastructure (the inputs), or define the specific kinds of assets involved, or attempt to measure the output or service flows produced. With regard to measuring inputs, the agency could try to look at the owners of the infrastructure, or the users of the infrastructure.

The Annual Survey of Manufactures produces information on the production of investment goods, which would flow into the infrastructure; the Annual Capital Expenditures Survey (ACES) produces information on the users or owners of the capital who are doing the purchasing; and the Bureau of Economic Analysis (BEA) uses Census Bureau data to produce measurements of investment flows. None of these measures, nor others currently available, are specifically geared to e-business infrastructure. While information on the e-business infrastructure will be included in most of these estimates, those data will not be specifically identifiable.

In earlier work the Census Bureau had proposed refining and expanding inquiries on investment goods shipments, or adding questions to the ACES to expand that aspect of the agency's measurement. One unresolved issue concerns determining the appropriate reporting unit. There is the further question of whether or not an entirely new classification system should be created for measuring these assets.

Mr. Gates noted that the Census Bureau is considering inviting various other concerned Federal agencies to participate in a working group to investigate approaches for measuring e-business infrastructure, but budget restrictions have precluded doing so to date. The agency also is considering using a supplement to the ACES to collect additional information. The Census Bureau is proceeding with developing a new quarterly economic indicator for technology-related services industries, and also is looking at the feasibility of developing measures of services products.

Mr. Gates said the Census Bureau wants to have members' advice on the following principal topics involved in measuring e-business infrastructure—

- ! Where is the boundary between other infrastructure and e-business infrastructure?
- ! Is it more important to know the infrastructure components being produced, or to gather information on use and/or ownership?
- ! How important is it to try to deal with the question of human capital?

- ! Are there other approaches to measuring e-business infrastructure that the Census Bureau should consider?
- ! What priorities should the agency apply when planning this work? Which information is most important and which would be least important?
- ! How important is information on the e-business infrastructure in relation to other new economic statistics?

Dr. Greenstein said that the Census Bureau clearly has put a great deal of thought into characterizing and measuring e-business processes and infrastructure and e-commerce. He noted that there is quite a bit of information on e-business available from commercial sources, but most of it comes with self-serving commercial motives, or with a deliberate focus tailored to the needs of a marketing department. There is little commercially available data addressing the concerns expressed in the background paper. In addition, some public issues hinge on having unbiased data available, so the Census Bureau's initiatives have the potential to "ground" discussion and orient debate, and, at a minimum, avoid some common misconceptions.

Dr. Greenstein characterized the measurement of e-business infrastructure as a \$100 billion program, with quite a few \$10 billion problems, and about a dozen \$1 million problems as well. Data are the primary constraint on progress, so it seemed to him that the agency should focus on the \$10 billion problems and leave the lesser difficulties aside for now.

He suggested that if the Census Bureau collects data on this subject, researchers will certainly use them. Given this, the agency should plan to produce data to allow for multifaceted use and for competing interpretations of the underlying economic phenomena. This primary concern can be subdivided into three components—

- ! Data collection for information infrastructure is not like collection for other types of infrastructure, such as roads, and needs to be tailored to the industries involved.
- ! The data will be more valuable with a wider coverage of industries.
- ! The data will be more valuable if it enables researchers to test different interpretations of infrastructure regardless of how that is defined.

The measurement that is being planned will not reflect the unique features of the information and telecommunications (IT) markets. For example, the measure of software poses special problems for the construction of an index of e-business infrastructure. A rule-of-thumb in most corporate information groups is that packaged software and hardware constitute an important, but not overwhelming, share of expense. On the other hand, maintenance, administrative support, and "owned" software programming are the largest expense. For measurement, this situation is problematic; the activities produce assets, involve a lot of human capital, are complex investments, and often are constructed for idiosyncratic ends. The assets have little resale value, while at the same time having a high service value to the owner. What then is the proper way to estimate the value of owned software? No one really has a perfect answer, but it is possible to make some recommendations. Shipments will give a grossly deceptive—by an order of magnitude—sense of the true value of the investment users make when they take delivery. Yet estimates of owned software will have enormous consequences for any measure of e-business



infrastructure. At a minimum, the Census Bureau will have to undertake a study of use to have any hope of constructing any reasonable estimate of e-business infrastructure.

There is great variation in the ownership structure for the delivery of IT services. Normally such variation in ownership would not present a particular problem, but in this market, firms outsource parts of their business computing and communications. There is not a "clean" boundary between the parts of the assets owned by a firm, rented from somebody else and kept on premises, and assets rented from somebody else who also provides some fraction of the service involved. Outsourcing of this kind is an expanding trend now, and is likely to continue to grow. The question is how to attribute infrastructure to a location, industry, and user, in such a situation. If the boundary between the organization and the markets are shifting over time, or between industries, there is a concern that the measure of infrastructure will be quite sensitive to the administrative decisions by the firms involved. The point is that it will be very difficult to attribute infrastructure to a specific industry without understanding what fraction has to be estimated from some input-output analysis. He recommended that the Census Bureau investigate this question before it makes any estimates in this area.

Dr. Greenstein pointed out that there is a trend among commercial data-collection firms of learning about Internet users. He was puzzled that no Census Bureau paper provides any information on what these private firms are doing, or compares what the Census Bureau wants to do to what these private firms already are doing.

Turning to the need for widening the coverage of the measuring of e-business infrastructure, Dr. Greenstein said economists will try to use any data on this to identify sources of economic growth. At a minimum, any study of economic growth will need data on the conduct and performance of an industry, or industries, over time, or against one another. However e-business is defined, it will include a wide variety of disparate technical pieces, which will make it difficult to identify the impact of any particular piece, or to trace the line of causality from infrastructure to outcome. This will be easier to do with more variance in the data. This leads him to recommend that the Census Bureau widen the scope of the data collection.

He added that, compared to commercial vendors, the Census Bureau has the advantage of comprehensiveness in its statistics. That quality is very valuable to researchers. However, comprehensiveness comes at the cost of "granularity," that is, it is very expensive to get greater detail for units of observation in addition to being comprehensive. If the Census Bureau is going to invest resources in more granularity, the most valuable would be the kind that would help data users identify differences within subsectors of the same industry, or differences between firms in the same industry but in different locations.

With regard to the interpretation of the economic infrastructure, Dr. Greenstein urged the Census Bureau to resist pressures to lock itself into one definition. There is no requirement to settle on hard definitions at this time; there is no way to know what the "right" definition is when the decision will necessarily lack the context of a precise research purpose. For most questions, researchers will want to test different, plausible, definitions of e-business infrastructure, and it would probably be best for the Census Bureau to use a broad and inclusive definition now and give data users the freedom to rearrange it to suit their goals later.

He added that he understood that the Census Bureau has to make decisions now in order to collect data now, but suggested the agency should err on the side of using a flexible definition.

Mr. Gates said that the Census Bureau has produced a small, in-house paper, that includes a list of alternative e-commerce measures.

Dr. Browne commented that, while she shares Dr. Greenstein's enthusiasm for the new industry initiatives, she remains skeptical of making a major effort with regard to e-business infrastructure at this time. This just seems premature; the Census Bureau, and data users, need to know more about how business is being conducted. How will a firm be able to allocate its stock and capital to specific uses? She imagined the agency could collect information on investments, but trying to collect information on, or to estimate, a capital stock, raises a whole host of problems. For her, the bottom line is that while she is positive about the overall emphasis on e-business, the specific goal of measuring infrastructure, in this context, will be extraordinarily difficult, and should probably take a backseat to some other activities.

Dr. Swan said he is very supportive of the idea of an interagency working group to address some of the questions involved in collecting data on e-business. From his point of view, one of the big issues involved here is prices, which involves depreciation, rates of replacement, and stock measurement issues.

Dr. Goolsbee agreed that, given a choice between collecting data on production, and collecting data on use, the latter would be a better measure of e-business infrastructure. Production data would only provide information on a single industry—whichever industry is making a given product. What is wanted is information across industries, and use would be better for that purpose. Many economists are saying that the productivity slowdown experienced was the result of the purchase by companies of a lot of computer technology; productivity growth goes down when computer technology is first adopted, but the long-term payoff is enormous. This is the kind of data that would enable researchers to look at this phenomenon. It also would be worthwhile to think through the issue, not only of depreciation, but of retirement of capital stock.

In response to a question by Dr. Browne, Dr. Goolsbee said he believed e-business infrastructure warrants its own initiative by the Census Bureau. There is a lot of argument that this kind of investment has fundamentally different dynamic properties than purchasing machine tools or other capital goods. He agreed with Dr. Browne that trying to collect the data will be very difficult.

Dr. Goolsbee pointed out that commercial data services change definitions with almost every survey. The Census Bureau should anticipate that it will have to change many of its categories as time goes on.

Dr. Betancourt noted that the infrastructure initiative presents a significant potential for double-counting capital assets. For example, a hospital has a computer that it uses to keep track of its patients, but it also is used by the hospital administration to handle supply orders and other administrative functions. Is this capital equipment?

He added that yesterday one of his students had pointed out an article in the *Financial Times* which reported that a new study suggested that the supposed enormous increase in productivity attributed to the expansion of information technology had been greatly exaggerated, and that much of the real growth, at least in the retail trade area, was due to a single company—Walmart.

Dr. Roberts said he hopes that when the Census Bureau starts to collect these data, it will maintain the ability to merge them with production data from the economic census. The advantage of having better information on investments, such as detailed asset class, comes from being able to relate that to production. If these data can be merged with economic census data, then users will have the production data.

With regard to the question of whether the Census Bureau should try to collect data on human capital, Dr. Roberts suggested the agency emphasize collecting more information on occupation categories for people using or helping to create IT equipment.

Dr. Pakes commented that he could not understand how the Census Bureau will handle depreciation issues. He noted, for example, that costs for fiber optics collapsed in the last 12 months, so that spending \$1 million on fiber optics equipment last year, and spending \$1 million this year represents a vastly different investment. The conventional building or equipment depreciation rates could not be used. Computers seem to turn over every 2-to-3 years. He confessed he did not know how the Census Bureau should handle this situation.

Dr. Goolsbee suggested that there may be a price deflator that could be used. Dr. Pakes said there is a price deflator for computers available from the Bureau of Labor Statistics (BLS), but there is nothing available for fiber optics, or for many other components of IT technology. Dr. Greenstein added that it is particularly difficult because there are so many complementary activities and components associated with IT technology. For example, at one time, the major expense involved in adopting fiber optic technology was digging up and then replacing sidewalks and streets for installation of the cables needed.

Mr. Mesenbourg (U.S. Census Bureau) pointed out that the Census Bureau still is in the early stage in formulating its plans for this work. The agency intends to establish a study group with representatives from the BEA, the Federal Reserve Board, BLS, and the Economic Statistics Administration to look at e-business infrastructure measures, as well as at plans for a quarterly survey of IT-intensive service industries and to decide priorities. The Census Bureau's thinking is that it has a data-collection vehicle in place—the ACES—that may be useful in obtaining some information on the investment side. Unfortunately, there is nothing that will give the agency a clue on the human capital elements involved. The Census Bureau would like to hear ideas from this group as to whether the agency should continue in these directions, and try to get some information on which companies are investing in their IT professionals and/or outsourcing.

Mr. Gates added that the ACES staff is not optimistic about being able to collect detailed asset information from companies. Dr. Goolsbee suggested that the answer might be to try to 'piggy-back' a few elementary questions—i.e., what share of expenditures is for computers?—onto the ACES.

Dr. Greenstein said the Census Bureau might be able to obtain some of the information needed through the commercial data-collection firms. They would not be able to provide anything on intangible assets, but they would have reasonably accurate information on more tangible assets.

#### Census 2000 Supplementary Survey Data Overview (PAA, ASA, AMA)

Dr. Weinberg (U.S. Census Bureau) discussed the Census 2000 Supplementary Survey (C2SS). This survey was an operational test for collecting long-form questionnaire data every year rather than

once every 10 years. The C2SS is the largest household survey ever conducted by the Census Bureau, and it provides current information for the country, 50 states, and the District of Columbia. The data from this survey were released to the media in July 2001.

The survey included 700,000 households and was conducted in 1,203 counties nationwide. Data were collected using the American Community Survey methodology and questionnaire, and the data were gathered throughout year, using three components—

- ! Mailout/mailback questionnaire.
- ! Computer Assisted Telephone Interviews (CATI).
- ! Computer Assisted Personal Interviews (CAPI).

The C2SS weighted response rate was over 96 percent.

The first release of C2SS results to the general public was on August 6, 2001, and consisted of—

- ! 107 core tables.
- ! Narrative and tabular profiles.
- ! Demographic, economic, social and housing characteristics for the country, 50 states, and the District of Columbia.
- ! An estimate of changes during the 1990s for selected characteristics.

Comparisons can be made now among states using the C2SS data, and data for large counties and places will be available in November. National and state comparisons of C2SS data with 1990 census long-form estimates are possible, along with comparisons with Census 2000 long-form results once those data are available. Some examples of key statistics available are—

- ! Educational Attainment (population, age 25 years and over with a bachelor's degree or more)—
  - ! United States, 25.1 percent.
  - ! Highest percentages—
    - ! District of Columbia, 41.1 percent.
    - ! Massachusetts, 34.9 percent.
    - ! Colorado, 33.4 percent.
    - ! Connecticut, 33.3 percent.
- ! Language spoken at home (percent of population who speak a language other than English at home)—
  - ! United States, 17.6 percent.

! Highest percentages—

! California, 39.5 percent.

! New Mexico, 35.5 percent.

! Texas, 32.0 percent.

! Median housing value (dollar value of owner-occupied, one family housing units)—

! United States, \$120,530.

! Highest values—

! Hawaii, \$288,332.

! California, \$216,063.

! Massachusetts, \$192,694.

C2SS data permits comparisons with the 1990 census because the survey provides a preliminary look at data similar to those that will be available from the Census 2000 long form. Users making this type of comparison, however, should be aware that—

! Legitimate comparisons to the 1990 long form can be made, but not for all characteristics.

! Group Quarters population is included in 1990 long-form data, but not in the C2SS estimates.

! Some questions were changed substantially between 1990 and 2000.

The C2SS characteristics most comparable to 1990 census long form results include—

! Population Items—age, sex, marital status, place of birth, citizenship, year of entry, education, language, veteran status, and commute to work.

! Housing Items—year householder moved in, rooms, plumbing, telephone service, vehicles available, heating fuel, tenure (owner/renter), monthly rent and selected monthly owner/renter costs.

Other C2SS characteristics comparable with some limitations to 1990 census long form results include—

! Population Items—household relationship, ancestry, occupation and industry.

! Housing Items—occupancy status, year built, year householder moved in and housing value.

Some examples of comparisons between the 1990 Census and the C2SS include—

! Educational attainment—

! Population 25 years old and over with a bachelor’s degree or more.

1990 (Census)	2000 (C2SS)
20.3 percent	25.1 percent

! Population 25 years old and over with no high school diploma or GED.

1990 (Census)	2000 (C2SS)
24.8 percent	18.4 percent

! Language spoken at home—

! Percent of population who spoke a language other than English at home.

1990 (Census)	2000 (C2SS)
13.8 percent	17.6 percent

! Percent of population who spoke Spanish at home.

1990 (Census)	2000 (C2SS)
7.9 percent	10.5 percent

As for comparisons between the C2SS and Census 2000, there are some major issues regarding the collection of race and Hispanic origin data which are due to—

! The Office of Management and Budget (OMB) decision to add a “Mark all that apply” instruction, which was first implemented for Census 2000.

! Small changes in how a question is asked can result in different answers.

! C2SS collection methods were not the same as Census 2000.

Data users are reminded, however, that Census 2000 provides the official counts of these populations.

Soon to follow are additional releases of C2SS data for about 60,000 places and over 200 counties, scheduled for—

! Fall 2001—107 core tables for substate areas (most counties and cities with populations of 250,000 or more).

! Winter 2001—700 noncore tables for country, 50 states, and the District of Columbia.

! 2002—Comparisons of C2SS data with Census 2000 long-form results.

In summary, the Census 2000 Supplementary Survey was an operational success as a feasibility test. Data released in July are an example of what will be available every year for smaller areas from the American Community Survey beginning in 2004, pending congressional funding. These data reflect many aspects of how the country has changed over the decade. For more information, please contact the—

! Census Bureau Web sites

! [www.census.gov](http://www.census.gov)

! [factfinder.census.gov](http://factfinder.census.gov)

! [www.census.gov/c2ss/www](http://www.census.gov/c2ss/www)

! Public Information Office

! 301-457-3691

! E-mail: [2000usa@census.gov](mailto:2000usa@census.gov)

Dr. O'Hare (American Statistical Association [ASA]) congratulated the Census Bureau on its success so far with the C2SS and the American Community Survey. Both surveys provide valuable data for those who need to examine social and economic conditions in the country, states, and localities. Also, the American Community Survey addresses the two most common criticisms voiced about decennial long-form data—

! Users can get an abundance of data at the national or state levels but can not get what they want for localities.

! The data are not available in a timely manner and are at least 2-to-4 years old.

There is general concern that funding for the American Community Survey will not be available for fiscal year (FY) 2003, but the fact that people now are using the data is cause for optimism.

Some other concerns or issues include—

! Comparisons between the C2SS and the Census 2000 Summary File 1 data now available at the national level on the Census Bureau's Web site also should be made available for states.

! There are rumors that some of the data for states now available on the Census Bureau's Web site will be corrected or updated, so the agency needs to communicate what is happening as soon as possible.

! Another concern involves the confidence intervals for the C2SS tables, which are referred to as lower and upper bounds. Other Census Bureau products refer to confidence intervals or standard errors, which causes confusion. There should be a common terminology for explaining this concept.

Dr. Weinberg said that the American Community Survey is fully funded through FY 2002 and that the Census Bureau is optimistic about FY 2003.

Regarding the data for states, the Census Bureau probably will be reissuing and making small changes in the data issued in July 2001, due to a change in the weighting procedure. There were several different strata for self-representing counties, and the Census 2000 counts were used to control the population counts in those counties. For nonself-representing strata, the total for each stratum was used as a control. The agency, however, overlooked the fact that some of the non-self-representing strata contained large counties, and there was no guarantee that the total population for these counties would match the census counts. The Census Bureau decided to reweight all of the large counties, even within the non-self-representing strata, to match their census control totals. Consequently, if the count for a large county is increased within its stratum, the counts for the other counties in that same stratum must be decreased for the totals to remain the same. This procedure may affect the state numbers slightly, but not significantly.

The Census Bureau will be working with a senior mathematical statistician at the U.S. Bureau of Labor Statistics to determine what standard error estimates are appropriate for the experimental poverty measures, since they are based on so many different models, data sources, and assumptions. The agency's typical publication contains a measure of the confidence interval, and it almost never lists only the standard error, at least for demographic statistics. The Census Bureau uses a 90-percent confidence interval to determine statistical significance.

Mr. Waite (U.S. Census Bureau) added that one of the Census Bureau's intentions is to communicate the fact that much of its data are taken from samples, and users should not overstate the precision with which these data are derived. If users carefully examine the confidence intervals, they might notice that the point estimates seem to differ, but no one really knows whether they differ because this year's sample is slightly different from last year's sample, or if this month is slightly different from last month. In fact, there is a policy at the Census Bureau that the agency should not be publishing data that come from a sample without some indication of the sample's uncertainty.

In response to a question by Dr. O'Hare, Dr. Clark (U.S. Census Bureau) said that the Census Bureau currently is reviewing its standards on error presentation and that the topics of confidence intervals, standard errors, and imputation will be added to the agenda for a meeting on the following Monday.

In response to another question by Dr. O'Hare, Mr. Waite said that the annual cost of the American Community Survey is paid for by adjustments in the planning for the 2010 census. Mr. Price (U.S. Department of Commerce) added that it is not possible to give precise dollar amounts for FY 2003 until the budget is released in February 2002.

In reply to a question by Dr. Belin (ASA), Dr. Weinberg said that the Census Bureau's intent is to use its intercensal population estimates program to provide survey control totals for counties. Currently, these totals are derived mainly from administrative records, such as birth and death records. Under a plan now being developed, American Community Survey estimates also will be fed into the modeling process, in which the raw numbers adjusted for sampling rates will be provided to the population estimates program, which will then be factored into the models in some yet-to-be-determined way. Mr. Waite added that the American Community Survey will be controlling to the population estimates. Those estimates will come from Census 2000, and one



thing the census adds to this demographic analysis is an independent measure of characteristics, such as the foreign born. So, the addition of an American Community Survey measure to these characteristics every year will serve to enhance the intercensal estimates. Ultimately, the survey will control these population estimates down to the county level.

In reply to another question by Dr. Belen, Dr. Weinberg said that the American Community Survey conducts an initial mailout followed by a second mailing after the first month. The response rate from these mailings is around 60 percent. The rate varies substantially across the U.S. from a low around 30 percent to upwards of 70 percent. Those not responding are eligible for a telephone interview. The Census Bureau uses a number of administrative sources to obtain the nonrespondents' telephone numbers. The telephone follow-up increases the overall response rate to about 70 percent. After the third month, the agency conducts a personal visit follow-up of the remaining 30 percent. A one-in-three sample is taken of this remaining caseload. These telephone interviews add about 26 percent (weighted) to the 70 percent and brings the weighted total to 96 percent.

#### Services Sector Data: What We Have and What We Need (AEA)

Mr. Zabelsky (U.S. Census Bureau) said the 1992 Economic Census saw greatly expanded coverage of service industries and the economy in general—a necessary prelude to a corresponding expansion of the scope of the current services program—while industry definitions were updated through the adoption of the North American Industry Classification System (NAICS) for the 1997 Economic Census and for the agency's current economic programs in 1999. The NAICS recognized hundreds of new activities in the services area. The development of the North American Product Classification System (NAPCS) will provide the first official system for classifying service products. Today, the Census Bureau's Services Annual Survey (SAS) publishes data for over 300 industries/ industry-segments, compared to just 22 when the survey was introduced in 1983.

The Census Bureau also has expanded the SAS content. The survey is a nationwide sample survey of about 60,000 companies, representing about 2.5 million employer establishments. It covers trucking, courier and messenger services; warehousing and storage; the information sector and selected financial services; rental and leasing; professional, scientific, and technical services; administrative and support, waste management and remediation services; healthcare and social assistance; arts and entertainment; and other services except public administration, religious, labor, and political organizations. (The background paper includes a more detailed list of industries covered by the survey.) The Census Bureau also obtains data from administrative records for about 8 million nonemployer establishments for incorporation into the survey estimates.

Total revenue is the basic measure of output collected in the SAS. Revenues for nonemployer records are acquired from administrative records, and account for only about 8 percent of the total revenue produced across all sectors. (Less industry detail is available for nonemployer establishments.) Since revenue is not a very good measure of output for tax-exempt firms, the Census Bureau publishes estimates of both revenues and expenses for firms and organizations exempt from federal income taxes. Total revenue also is limiting for businesses with mixed or multiple outputs. For manufacturing establishments, the agency collects detailed information on primary and secondary products, which allows it to measure the total output of a particular

product no matter which industry produces it. The SAS produced limited revenue line information for some industries as well.

The Census Bureau will begin testing the provisional NAPCS—for information and computer services—in the 2001 SAS. (The 2002 Economic Census will be the “official” test platform for the NAPCS and will collect far more detailed product lines than will be attempted in the SAS.) In addition to the revenue line data and the NAPCS data, the 2001 SAS also will collect other information for various industries—e.g., sources of funding for health services; total and detailed expense data for the telecommunications and broadcast industries, etc.—and e-commerce revenue for all industries, and will publish it for all sectors and selected subsectors covered by the SAS.

Mr. Wallace (U.S. Census Bureau) said that despite the improvements made in the current services program over the years, there still are significant gaps in the data. The Census Bureau’s current economic statistics programs include 13 principal economic indicators that track economic activity in the United States. The major deficiency in this series of economic indicators is that they do not adequately cover the services industries. At present, current services industries data are collected and published only on an annual basis. Further, while the Census Bureau collects data on approximately 9,000 separate products for manufacturing (which comprises a total of 474 industries), only 950 services products are identified for the 424 services industries.

Information on specific service activities would significantly improve estimates of the gross domestic product (GDP), and real GDP by industry, and the annual input-output accounts. Improved services product data also will provide—

- ! New information on inputs and outputs of industries, which, in turn, will allow more accurate assignment of inputs and outputs than just industry-level data would allow.
- ! Improved consumer spending and business investment measures, both key components of the GDP estimates.
- ! Data on value-added for services industries. Currently, value-added data are available for manufacturing and for retail and wholesale trade, but not for services industries. These data are needed as source data for the Bureau of Economic Analysis’s (BEA’s) development of input/output account and estimates of GDP by industry, and by the Federal Reserve Board to assess each industrial sector’s contribution to economic activity and productivity.

Mr. Wallace said the Census Bureau has undertaken four major initiatives for improving current services data as follows—

- ! Establish a new principal economic indicator on a quarterly, or possibly more frequent, basis. This indicator would cover 4,000-5,000 business in industries providing information and high-technology services. The first data from this indicator—assuming budget support is forthcoming—would be available around the third quarter of 2003.
- ! Continue development of the NAPCS. This is currently an ongoing trilateral (the United States, Canada, and Mexico) project under the overall direction, in the United States, of the Chief Statistician of the Office of Management and Budget. The 2002 Economic Census will be the major test of the new system, and will involve greatly expanded detail on products.

Response to the census will be used to “fine-tune” the NAPCS. A comprehensive list of service products is being developed now, and the new data will begin to emerge from the 2003 SAS.

- ! Develop estimates of services value added. The Census Bureau, BEA, Bureau of Labor Statistics, and other federal agencies, will be determining the specifics for collecting value-added data. The BEA and other agencies actually calculates the value-added data using components collected by the Census Bureau, and both total sales and the cost of goods sold are needed for these calculations. Beginning and ending inventories also are components of the cost-of-goods-sold data, but this presents some problems for the Census Bureau because it is uncertain what that would mean for some service industry businesses, e.g., a barber shop or beauty parlor.
- ! Expand coverage of the SAS. The Census Bureau already has greatly expanded the SAS, but wants to widen the scope further. In particular, transportation, utilities, and the financial industries are considered desirable additions to the survey.

Mr. Wallace said the Census Bureau has several questions for the members to consider—

- ! Given the fact that it is unlikely there will be sufficient resources to follow through on all four of the major initiatives outlined, how should the agency prioritize its work?
- ! Is there anything else the Census Bureau should do that is more important?
- ! What data other than that described in the background paper should be collected for the quarterly indicator survey?
- ! How significant is collecting data on beginning and ending inventories for value-added calculations? What should comprise these inventories, and how much detail is necessary?
- ! How should the Census Bureau prioritize the selection of service industries for expanded coverage in the SAS?

Dr. Betancourt said the Census Bureau’s improvements to its service statistics are very welcome. The service industries are a very important sector of the economy, and are very hard to measure. The background paper was useful, but omitted any measure of the relative importance of the service industries to the economy. He could see no great advantage in collecting information more frequently on any given industry if the agency did not know, and did not let users know, the importance of that industry relative to other industries in economy. There are several ways of justifying relative importance, other than size, and these need to be considered.

He asserted that talk about the “new economy” is all very well, but much of it seems to overlook critical facts. For example, if one looks at a mature industry such as transportation, it seems to be overshadowed by e-commerce, until one realizes that every material item ordered over the Internet has to be physically delivered to the purchaser. As Internet transactions increase, so will the need for transportation services. The Census Bureau should be very careful about the choices it makes for inclusion in any new periodic economic indicators survey, or it may find itself collecting data that are less and less relevant in measuring the underlying structure of the economy.

He agreed that there is a need for improved data for services generally. This is an integral part of the United States' participation in the North American Free Trade Agreement. The problem with regard to improving the data for services industries is the conceptual framework currently in place. The NAICS is production based, and that makes no sense for service industries. The proposed product classification system—the NAPCS—will be evolving over the next several years, and he urged the Census Bureau to keep the system as flexible as possible.

He suggested that “value-added” is probably the most useful information that could be produced for economists, but it makes no sense to talk about inventories in the context of service industries. The bulk of service industries do not maintain inventories and even those that seem likely to have some sort of inventory, such as computer software producers, will not have conventional inventories. Consequently, asking for the data will not be very enlightening.

He suggested that there is an alternative to the means described in the background paper to gather information on value added for services. Any company will make use of capital, land, and labor; the Census Bureau could ask for the contribution in terms of value added made by the capital, land, and labor for the period of analysis. This alternative will not be without its own problems—there will be questions about how to value land and capital for this purpose—but it would eliminate the problem of trying to collect inventory data for services, and would give some idea of the value added for the industries involved.

Mr. Zabelsky said that the Census Bureau has emphasized expanded coverage in the incremental expansions carried out for the SAS over the life of the survey. Many of the industries that still are not covered by the survey are those that have previously been regulated—e.g., banking, insurance, etc.—and there are data systems still in place that provide a potential source of information. Consequently, the Census Bureau has not yet moved into these areas in its annual data collection program. There is more interest in collecting data on these activities now. The agency made a decision early on not to collect data on service industries more frequently than annually, because most service industries are not particularly cyclical. As the expansion of the survey program has proceeded, it has begun to cover more service areas, including some that are sensitive to movements in the business cycle. The Census Bureau believes now is the time to consider a quarterly indicator program for services. The question of which areas to include in such a program remains open; high tech industries are obvious candidates, but trucking and other transportation industries, hotels, or the advertising industry, need to be considered as well. The agency has leaned toward the high tech industries because they seem to involve virtually all the other industries as well, and they seem a good place to begin.

Mr. Mesenbourg (U.S. Census Bureau) pointed out that the Census Bureau's priorities in this matter reflect those of the BEA. In discussions between the agencies, the BEA indicated that its first priority is the current measure of service activity, giving as an example the revision in the software accounts it had to make because of the lag in the annual data provided by the Census Bureau, which made a significant difference in the BEA's quarterly estimates of the GDP.

Dr. Browne shared Dr. Betancourt's views regarding inventories. She suggested the Census Bureau should talk with accounting experts about the practice by software companies, for example, of “booking” revenues when a contract is signed, and then delivering products over a more extended period.

Dr. Greenstein pointed out that the conventional wisdom seems to be that parts of modern economies—those with high fixed costs and low variable costs, such as heavy manufacturing—are quite sensitive to the business cycle, and high periodicity of data is desirable for these sectors. What is the agency's reason for wanting higher frequency data collection for service industries?

Mr. Wallace distributed a handout that included a listing of industries in the service sectors—primarily information and professional, scientific, and technical sectors of the economy—that the Census Bureau believes are most prone to driving some of the cyclical changes in the high tech sectors of the economy.

Responding to comments by Dr. Greenstein, Mr. Mesenbourg said the Census Bureau's thinking about current data needs has been influenced by the events of the last year. There have been huge decreases in manufacturers orders and shipments, and similar decreases in manufacturers' data were seen in the trade statistics. There are no data for the services industries except the annual statistics, and the Census Bureau consulted the BEA and the Federal Reserve Board (FRB) with regard to their priorities for service industry data. Both agencies indicated that they needed additional information for selected high-tech industries, and said that quarterly measures were needed. Moreover, revenue alone was not sufficient, which has led the Census Bureau to ask for "contracts awarded."

Dr. Greenstein commented it seemed to him the Census Bureau is being asked to provide high-frequency data on industries that are growing. The problem with that is that 5 years from now, different industries could be, and indeed are likely to be, the growth industries. He understood why the BEA and the FRB want these data, but the problem will be to identify which industries are growing from year to year.

Dr. Browne pointed out that employment frequently can be used as a proxy measure for growth within an industry, but some high tech industries are not well-proxied by an employment measure. It is possible that the data users are looking for more data on such industries—data that would enable them to make better estimates of growth even without indications from employment statistics.

Mr. Wallace suggested that the Census Bureau had considered changing the "growing industries" shown in its data products overtime. However, the agency believes this would create significant problems, not least of which would be deciding which industries are "growing" and should be included in succeeding data products. Mr. Mesenbourg agreed, adding each of the data sets will have a constituency, for which changing the products would cause considerable difficulties. That is one reason why the Census Bureau decided to "start small," so that the survey can be expanded as the agency gains expertise and knowledge of how to collect and present the data.

Dr. Swan pointed out that one of the interesting things that might come out of better measures of data-processing services is that they may be "counter cyclical." He added that outsourcing has grown because it enables companies a better means of managing the cost of production.

Dr. Pakes suggested that adding and deleting certain measures from a periodic indicator means that the quality of those measures, even when included, will be degraded.

Replying to a question by Dr. Goolsbee, Mr. Mesenbourg said the most important users of data from the M3 Survey (Manufacturer's Inventories, Shipments, and Orders) are the Council of

Economic Advisors and the FRB. The primary object of interest is to have some idea of current economic performance. Dr. Goolsbee said that, given the uses to which the data are put, the Census Bureau should probably be most interested in covering the largest industries in a given sector. Dr. Pakes suggested that the Chairman of the FRB is more interested in what are the productivity-generating industries.

Mr. Zabelsky pointed out that, if size or contribution to the overall economy is the primary criteria, then service industries “beg” for a quarterly survey.

Dr. Pakes said that once the Census Bureau decides what kind of measures it wants, the job of designing the survey can be passed on to the statisticians, who can say how big the sample has to be and who should be sampled. The real question, however, is what is the Census Bureau really interested in measuring?

In response to a question by Dr. Goolsbee, Mr. Zabelsky said he believed the principal users were more interested in changes in growth, rather than simply growth. What industries reflect changes in movement in the business cycle?

In reply to a question by Dr. Pakes, Mr. Mesenbourg said the principal users of the economic indicators are the Council of Economic Advisors, the BEA, and the FRB. They are the Census Bureau’s primary customers.

Dr. Goolsbee commented that most microeconomists are interested in measures of productivity, and he believed that it will be very difficult to obtain useful data from a more frequent (than annually) survey of services. Dr. Pakes added that someone interested in doing micro-level studies would probably be more interested in more detailed data, rather than more frequent data.

Mr. Mesenbourg said another issue is the saleability of the activity. The high-tech focus of a quarterly survey is more saleable than plans to collect value-added measures, or more detailed products.

Dr. Goolsbee suggested the Census Bureau could “sell” a survey that is primarily concerned with finance by including items on the use of high-tech equipment or processes by the industries covered. As a rule of thumb, the Census Bureau should try to cover the “biggest” industries, and, to the extent possible, include inquiries on high-tech concerns as well, to include saleability. However, the agency should not exclude healthcare in order to include Internet retail sites, which represent a much smaller proportion of the economy.

Census 2000 Experiments—Results: Effects of Questionnaire and Content Changes on Responses to Race and Hispanic Items; Results of Replication of the 1990 Census Form in Census 2000; Assessing the Impact of Differential Incentives and Data Collections Modes on Census Response; Update on Census Evaluations (PAA, ASA, AMA)

Ms. Killion (U.S. Census Bureau) said that the goals of the Census 2000 testing, experimentation, and evaluation program are to measure the overall success of Census 2000, to study the success or failure of component operations, to inform planning for the 2010 census, and to contribute to planning and research for the American Community Survey. The program consists of over 140 evaluations and 7 experimental studies. Agency experts are making progress on all the

evaluations of Census 2000 activities, and a few are under review by Census Bureau senior staff. In March 2002, the agency will begin to release these reports to the public.

Ms. Guarino (U.S. Census Bureau) noted that when the agency created its nonresponse follow-up (NRFU) list of addresses that had not returned completed census questionnaires by mid-April 2000, each 1 percent increase in the mail response rate saved as much as \$25 million in data-collection costs. The objective of her study was to determine if NRFU costs could be reduced by encouraging nonrespondent households to use an alternative data-collection mode (e.g., telephone or the Internet) instead of resorting to personal interviews. An earlier Census Bureau study had determined that a blanket mailing to nonresponding addresses offering the alternative of answering the census by telephone had increased the overall response rate by about 2.6 percent.

This experiment added an incentive to the alternative response mode to determine if the incentive could increase overall cooperation with the second mailing and if the incentive could encourage potential respondents to use an alternative response mode. The Census Bureau mailed standard Census 2000 short questionnaires to about 20,000 households in the mailout/mailback universe. The 6,130 nonresponding households from this group formed the target population for this experiment. Next, the agency mailed a targeted nonresponse follow-up letter to the 6,130 households, offering nonrespondents the option of responding by mail or by one of three alternative modes (reverse computer-assisted telephone interview [CATI], automated spoken questionnaire [ASQ], or Internet). However, the follow-up letter did not include a replacement questionnaire; to respond by paper, respondents would have to locate the form mailed to them about 2 months earlier.

The agency was not testing the use of incentives as a response-conversion technique. The goal of this experiment was to isolate a group of traditionally hard-to-enumerate respondents and determine the effect of these factors on response for this group.

The nonrespondents were divided into three groups of approximately the same size. Each group was given the choice of responding by mail or by one of the three alternative modes. The letter sent to the CATI group of households included a toll-free telephone number which would connect the caller to an interviewer who would key the respondent's short-form information into a preprogrammed computer. The letter mailed to the ASQ panels provided recipients with a different toll-free number which connected respondents to a computer that was programed to convert spoken data into text. Respondents who encountered difficulty with the ASQ were automatically transferred to an interviewer who would collect their information. The letter the third panel received gave recipients the option of responding to the questionnaire via the Internet by going to the Web site provided and keying in their responses.

The second experimental factor, the presence or absence of 30-minute telephone calling card, served as an incentive to use the alternative response mode.

The original sample of 20,000 households was proportionally allocated to two strata—low coverage areas (LCAs) contained high proportions of non-White and renter populations and had a lower propensity to respond to the census than the high coverage areas (HCAs).

The study tested several hypotheses—

- ! With regard to alternative response modes, that reverse CATI and ASQ would have significantly higher response than the Internet because the nonresponse universe typically resembles households without Internet access.
- ! With respect to the incentive, she thought that the incentive would increase response and that the effect would be stronger in LCAs than in HCAs.

She reported that the data revealed that her hypothesis concerning alternative response modes was partly correct—CATI gained significantly higher response than the Internet, but, contrary to her hypothesis, also received significantly higher response than the ASQ. It turned out that this surprising finding had nothing to do with respondent preference. Rather, it related to difficulties many respondents experienced in trying to use the ASQ.

Turning to the effect of the incentive, she discovered that it did increase response across the three different response modes, but that the increase was significant only for the ASQ. She also noted that her hypothesis concerning the relative effectiveness of the incentive in LCAs and HCAs was unproven—the incentive effect did not differ between low and high coverage areas. Finally, the data showed that with regard to overall response rates, the group that received the incentive was no more likely to respond than the one that did not. From these results, she concluded that the incentive was effective in getting respondents to select a new response mode, but it did not encourage response from households that otherwise would not participate.

The study also revealed that the second mailing generated 13-percent participation from the nonrespondent universe.

Dr. Etzel (American Marketing Association [AMA]) read comments prepared by Drs. Peterson and Pechmann (AMA). He noted that a large body of literature demonstrates the effectiveness of second mailings in increasing response rates. A number of private companies, such as J.D. Power and A.C. Nielsen, depend on their abilities to generate responses for their existence. Representatives from these and similar companies might be willing to discuss how their firms generate survey response at a Census Bureau sponsored symposium.

Marketing people generally agree that follow-up mailings almost always increase response rates. Indeed, the data suggest that response rates go up with each contact made with the respondent. The timing of these contacts is important, especially if the organization is not going to mail replacement questionnaires.

There is also a lot of research on the role of incentives in increasing response rates. The best incentive is cash. One important typology stresses the difference between pre-incentives, which are designed to make respondents feel guilty, and post-incentives, which are designed to reward participants. The relationship found between the response rate and the calling-card incentive could be an artifact of the type of incentive chosen. At an earlier advisory committee meeting, there was a discussion of the difficulties of identifying incentives that were not too expensive and that would still be effective. The agency should continue to explore this issue, perhaps with representatives of companies that have long experience in using incentives to increase their response rates.

Dr. Lohr (American Statistical Association [ASA]) felt that using incentives in a census was quite different from using them in surveys and that as a result, research along these lines was very



important. The most interesting finding was that although there was an increase of about 13 percent in the overall response rate, only about 40 percent of that increase could be attributed to the alternative modes. The rest were initial nonrespondents who completed and returned the census form they had received in March 2001. It would have been interesting to have a control group in this experiment that received just a reminder card or a second paper questionnaire.

She understood that the calling cards sent to respondents were not activated if the respondents returned the paper forms to the Census Bureau. She wondered if this was made clear to the respondents in the study.

This experiment also raises a number of other questions, such as what would happen if incentives were used in a second mailing that included a paper questionnaire? Would it be possible to increase the response rate further by allowing respondents to choose which mode to use? One question this experiment cannot answer, because the sample size is too small, is how incentives would work if used on a large scale?

Another issue this experiment does not address is the effect of discussions among respondents about the use of incentives. In the 2010 census, some respondents would probably learn that one or more neighbors had received incentives for responding while the original respondents had participated for free. It would be useful to investigate public opinion on this. If incentives were widely used in the 2010 census, they could provoke negative public attitudes toward the census or other government surveys and a disinclination to participate.

She also wondered if there were any differences in data quality between treatment groups.

She suggested that future tests on the effects of second mailings should be multifactorial because this would provide a lot more information for little or no extra cost.

Dr. Denton (Population Association of America [PAA]) expressed concern about using an incentive in a situation such as the census where response is mandatory. During a census, all it would take would be for a few talk-show hosts to urge listeners to wait until they received their incentive before responding. Response rates could plummet during the mailout/mailback period. In this circumstance, the agency would be providing an incentive not to respond but to wait until the incentives were mailed to nonrespondents.

She urged the Census Bureau to pay more attention to the Internet as a response mode. She thought Internet use will increase in the future, even among hard-to-reach populations.

Another area of concern was the amount of time between the mailout of census questionnaires and the beginning of nonresponse follow-up (NRFU). Earlier today, Mr. Waite (U.S. Census Bureau) said he wanted to shrink this time period. However, the report under discussion now indicates that a second letter sent to nonrespondents produced a significant increase in response. She suggested further research was needed on how respondents handled the questionnaire from the time it arrived in the household until it was completed and returned by mail. If the time period between mailout and the beginning of NRFU is too short, it may be counterproductive. People may feel they were not given enough time to complete their questionnaires.

She felt that the experiment should have allowed for activation of the phone card regardless of the mode recipients used to return the information requested.

Ms. Guarino noted that using incentives in census studies is a very sensitive subject. In approving the incentive study, the Office of Management and Budget (OMB) stipulated that the incentive was for using a new response mode, not for responding to the census. The parameters the OMB placed on the experiment limited the nature of the incentives that could be used and the experimental design. The incentive could not be given in advance because the agency did not know which respondents would use the alternative modes. None of the agency employees wanted to use cash incentives because of the perceived sensitivity. The idea of a calling card seemed appropriate because of its moderate cost and because the theme (telephone calls) fit in with some of the alternative response modes.

She stated that the agency would not recommend using incentives to help persuade nonrespondents to participate in the 2010 census. She reiterated that the purpose of this research was to determine how the people most often missed in censuses would respond to the use of an incentive. This study was conducted on the nonrespondent universe, but the results of an initial mailout study with the same experimental design are still being analyzed.

Turning to the issues of data quality and item nonresponse, she reported that item nonresponse was so low for all the modes that it could be safely disregarded at this time.

The most interesting finding from this experiment was probably the 13-percent increase in response following the second mailing. The study did not start out to be a second mailing study; that was the primary reason for not having a control group.

In response to a comment by Dr. Waters (PAA), Ms. Guarino noted that respondents who used the ASQ mode experienced a number of difficulties, such as having to speak or key their 22-digit identification number when first making the telephone connection with the computer and having to deal with a slow instrument. When respondents had problems with this mode, the computer automatically connected them to an interviewer. A usability study is underway to identify the problems and the particular items on the instrument which resulted in transferring respondents to an interviewer. Mr. Waite added that it should be possible to devise a unique number less than 22 digits long to identify a household. The agency is exploring shorter coding options.

Dr. Belin (ASA) asked about the possibility of using group incentives. Ms. Guarino replied that this topic had been discussed, focusing on community benefits, but was ultimately dismissed because it was logistically difficult to implement. She noted that the value of the calling card incentive was \$5.00, that a \$10.00 card was considered but rejected, and that any future experiments of this type ought to test longer duration cards and different types of incentives.

Responding to a question by Dr. Smith (PAA), Ms. Guarino stated that the secondary literature indicated that lotteries have proven ineffective.

Dr. Martin (U.S. Census Bureau) stated that substantial changes were made to the Census 2000 race and Hispanic-origin items in comparison to the 1990 questions. These changes raised at least two important questions—

- ! How did these changes affect data quality in Census 2000 as compared to that in 1990?
- ! Did these changes have any impact on the reporting of race or Hispanic-origin in Census 2000?

The goal of this study was to evaluate the total effect of all the changes in the race and Hispanic-origin questions on the responses to those questions in Census 2000. The experiment involved mailing a 1990-style short form to a randomly selected panel of 10,000 households. A control panel of 25,000 households received the Census 2000 short form. Differences in the resulting data can be attributed to the effects of the questionnaire and not to population changes between 1990 and 2000.

She summarized the main changes in the race and Hispanic-origin questions between 1990 and 2000—

- ! Respondents were able to report more than one race in 2000.
- ! The sequence of the race and Hispanic-origin questions in the 1990 census was reversed; for 2000, Hispanic-origin came first, followed by race.
- ! The questionnaire format was changed to improve user friendliness and response rates.
- ! Modifications were made to the response categories of the race question (e.g., the Asian and Pacific Islander category was split, and Native Hawaiians were explicitly added to the new Pacific Islander category; Alaska Natives were added to the American Indian category; and others).
- ! The wording of the Hispanic-origin question was modified.

The responses given by those in the study were tabulated as responses to Census 2000. The respondents did not know they were part of an experiment.

Only mail responses were included in this study. Both panels had similar response rates of approximately 72-73 percent. These forms were keyed, not imaged, so the processing procedure was different than that used in Census 2000. The pre-edits and codes applied to both sets of experimental forms were different from those used during Census 2000 and did not include any editing or imputation. Sample members who did not respond with their experimental forms were removed from the study and sent to regular nonresponse follow-up. Because this is not a factorial experiment, it is not possible to estimate the effects of specific design features. It will be possible to examine the effects of the questionnaire on the quality and content of mail response data. However, these data will not allow the researcher to discuss final census data quality.

The percentage of respondents reporting that they were of Hispanic origin in the 1990-style and 2000 questionnaires were nearly identical (11.1 percent). However, a much larger percentage reported as non-Hispanic in Census 2000 (85.6) than in the 1990-style forms (74.5). Many non-Hispanics who would have left the question blank in a 1990-style questionnaire seem to have completed the item in 2000. The percentage of respondents that did not answer this question declined from 14.5 percent in the 1990-style questionnaire to 3.3 percent in Census 2000. In past censuses most people for whom Hispanic-origin is missing were non-Hispanic; the Census 2000 questionnaire seems to have reduced item nonresponse.

With regard to race reporting, the percentages of both Hispanics and non-Hispanics who left the race question blank declined markedly from the 1990-style form to the Census 2000 questionnaire. This decline (from 30.5 to 20.8 percent for Hispanics and from 1.5 percent to 0.6

percent for non-Hispanics) was unexpected and had not appeared in earlier research. Race nonresponse was higher in Census 2000 forms (13.2 percent vs. 9.7 percent in the 1990-style forms) for people whose Hispanic origin was not reported.

A cross tabulation of race by form type (dropping those with missing data) revealed three statistically significant form effects—

- ! Responses of two or more races were more numerous in the Census 2000 questionnaires because of the new “one or more races” instruction.
- ! The Native Hawaiian and other Pacific Islander category was larger in the Census 2000 form than in the 1990-like form. This may be the result of the division of the 1990 “Asian and Pacific Islander” category into two categories in Census 2000.
- ! There is little evidence that the “one or more races” option reduced single-race reporting in the five major categories (White, Black, American Indian and Alaska Native, Asian, and Native Hawaiian and other Pacific Islander).

The stable pattern at the aggregate level masks some trends occurring among Hispanics and non-Hispanics. On the Census 2000 forms, nearly 50 percent of Hispanics reported themselves as White, compared with 40 percent in the 1990-style questionnaire. The percentage of Hispanics reporting themselves as “Some other race” declined by a similar percentage, from 51.5 to 38.9. These changes are probably due to the effects of reversing the order of the Hispanic and race items, as well as the addition of the “one or more” option.

Among non-Hispanics and those who did not respond to the Hispanic-origin item, people reporting themselves as White declined by a small, but significant, percentage, apparently due to the presence of the “one or more races” option on the Census 2000 questionnaire. Among the other major race groups, there were no significant changes except for a larger percentage reporting as Native Hawaiian or other Pacific Islander in Census 2000 forms.

The overall effects of the changes in the Census 2000 mail questionnaire included—

- ! More complete reporting of race and Hispanic origin.
- ! Increased reporting of two or more races.
- ! Similar distributions of race reporting in both forms, with very little evidence of decreased single-race reporting.

Among Hispanics, there is evidence of differential effects, including more reporting of White race and less reporting of “some other race” in the Census 2000 questionnaire than in the 1990-style questionnaire. This confirms the results of other research which has shown that Hispanic race reporting is very vulnerable to context, question wording, and methods effects.

These results have implications for comparisons of data from Census 2000 with data from the 1990 census because they imply that in the absence of actual population change, some changes in the data would occur as a result of modifications to the questionnaire alone. Questionnaire effects can either mask or masquerade as true population changes. For example, the

questionnaire changes would lead to an increase from 1990 to 2000 in the fraction of Hispanics who report themselves as White, in the absence of population changes. In interpreting trends from 1990 to 2000, researchers have to keep in mind possible artifacts due to changes in the questionnaire.

Dr. Waters (PAA) felt the presentation by Dr. Martin was very clear and that the kind of experiment she was describing was crucial to those using race data in their research. Teasing out the differences between questionnaire effects and population change among Hispanics during the last decade is very important for stating anything very important about the changing Hispanic population of the United States. One important area for future research is finding out more about how Hispanics think about race. Since a sizeable number of Hispanics still place themselves in the "Some other race" category, researchers and agency officials have to think about whether this category should be redefined and/or whether recourse to it in future censuses should be discouraged.

Dr. Etzel (AMA) noted that the agency's use of the term "race" combines notions of skin color, geographic origin, and heredity. Given this comingling of concepts, it is not surprising that many respondents find responding to the race question difficult and confusing. He suggested that future research might follow up Census 2000 by returning to a sample of households, including Hispanics, and asking questions to determine if the person's response to the race question in Census 2000 was really what he or she meant to convey.

Dr. Lohr (ASA) agreed that the papers presented at this session pointed out the need for more experimental investigation of the Hispanic population's interpretation of race. She urged the Census Bureau to do more research of this type because these projects represent some of the best investments the agency could make.

Dr. Martin agreed on the need for more experimental research. Agency researchers have seen that different questionnaires and data-collection methods can produce subtle effects on the resultant race data. She supported future research that would aim to develop questions that would be comparable across different modes and in different settings. This can be quite difficult to accomplish. Interviewers can not use flash cards in a telephone interview.

With regard to a follow-up project, she mentioned the content reinterview evaluation (part of the decennial census). While it does not ask what respondents meant by their answers to Census 2000 items, it does re-ask some questions, such as race, that could provide useful comparative data. In response to comments by Dr. Etzel (AMA), Dr. Martin noted that cognitive research has confirmed that many people are confused by the race and Hispanic-origin questions and by the large number of answer categories. She also mentioned another study to remeasure race using a single race question for those who gave a multiple race response to the Census 2000 question. Hopefully, this survey will provide a bridge for comparisons of Census 2000 race data with those from 1990 and earlier. Ms. Killion added that this survey has two questionnaires; one asks for a single race response and the other accepts one or more races. Whichever position the respondent takes, he or she then receives the other questionnaire. Those who complete the survey will have answered the race question on both questionnaires.

Dr. Bianchi (PAA) pointed out that outside researchers rarely see tables containing unedited data. She noted that Dr. Martin had provided unedited data on multirace responses in the 1990 census, which were later edited to produce single race responses. Using published 1990 census data,

researchers would not be able to determine which respondents considered themselves members of two or more races.

In response to a question by Dr. Belin, Dr. Del Pinal (U.S. Census Bureau) replied that in Census 2000, if a respondent did not answer the race question, the computer program would determine if anyone else in the household had responded. If another person had responded, the race of the person who had not answered would have been imputed. If no one in the household responded to the race question, the program would search for a similar household in the same neighborhood and impute race for all the household members.

#### Develop Recommendations and Special Interest Activities (AMA)

The subgroup members reviewed recommendations they had prepared prior to the session. (See Appendix A for recommendations made and the Census Bureau's responses.)

#### Develop Recommendations and Special Interest Activities (ASA)

Mr. Garrett proposed that the subgroup review suggested recommendations in the order of the sessions to which they pertained. He added that recommendations agreed to in this session would be revisited tomorrow to give members an opportunity to reconsider. Draft recommendations the subgroup was unable to review today will be discussed at tomorrow's session. As there were no objections, the group began with those pertaining to the session that provided updates on Census 2000.

Mr. Garrett offered a recommendation urging the Census Bureau to use the Count Question Resolution (CQR) program both to resolve Census 2000 data challenges and to identify and analyze any systemic problems that might impact the 2010 census. Several members wondered if changes resulting from the CQR process would be incorporated into the TIGER<sup>1</sup> system and if such changes would be reflected in the data available via the American FactFinder. Dr. Belin said he understood that the agency was incorporating changes from the CQR into the geographic database. Dr. Clark (U.S. Census Bureau) added that these changes would not be added to the Census 2000 database available via the American FactFinder.

Dr. O'Hare suggested that the agency consider informing data users about the geographic areas affected by changes stemming from the CQR program.

The subgroup adopted these two recommendations unanimously.

Dr. Belin offered two recommendations relating to 2010 census planning. One suggested that the agency develop a summary document providing a global perspective on duplicate enumeration and unduplication in Census 2000. The second urged the Census Bureau to support administrative records research, in part because it could provide a workable plan for an overseas enumeration.

Referring to the recommendation on duplicate enumeration, Dr. Clark stated that the agency planned to produce a summary document along the lines that Dr. Belin suggested. She agreed that administrative records research was very important and noted that whether this research is

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<sup>1</sup>Topologically Integrated Geographic Encoding and Referencing.

conducted with the goal of enhancing individual records, such as in an overseas enumeration, or for the purpose of modeling, the Census Bureau has to begin to construct the requisite databases now. Another potential application of administrative records research is in conjunction with the American Community Survey to calculate small area estimates. One further use that the agency wants to investigate is to fill in missing data instead of relying on imputation.

The subgroup adopted both of these recommendations.

Dr. Lohr recommended that the Census Bureau seek expanded funding for research, experimentation, and testing during the 2003-2008 period with the goal of reducing overall census costs and improving data quality. Dr. Ghosh suggested that the 2010 census could benefit from adopting modern information technology but stressed that this would require additional funding in the planning and testing phase. Mr. Garrett pointed out that the agency has stressed the need for planning to begin earlier in the 2010 census cycle, but noted that it may be difficult to obtain early funding because budgets are likely to be tight in coming years. He added that the Office of Management and Budget had recently advised agencies about the need to maintain budgetary restraint.

The subgroup combined these two recommendations and adopted the revised version.

Turning to the Census 2000 Supplementary Survey, Dr. O'Hare offered a recommendation urging the Census Bureau to standardize its language and presentation of information on sampling errors across publications. Mr. Garrett thought this was an excellent point, noting that many data users have trouble understanding the statistical language the agency uses. Dr. Clark said that the Census Bureau was working on a quality framework that will review and summarize standards, guidelines, and best practices. As part of this effort, experts are reviewing *Technical Paper 32*, dealing with the presentation of errors in agency publications, with the intention of identifying problems and standardizing solutions.

Dr. Lohr proposed a recommendation commending the agency on its program in designed experiments to decrease nonresponse, explore new technology, and increase data quality, and encouraging its further development, especially by increasing the number of factors included in experiments. Following a brief discussion, the subgroup adopted this recommendation.

Dr. Belin offered a recommendation suggesting that the agency refrain from further research on the use of incentives to influence individual response modes. He added that the potentially deleterious consequences might include the agency's becoming the target of jokes on late-night television. Another problem with the use of individual incentives would be that it could reduce mail response rates as respondents refrain from responding to a census or survey until they are offered the incentive. Further discussion of this recommendation was postponed until the following day.

#### Develop Recommendations and Special Interest Activities (PAA)

The subgroup members reviewed recommendations they had prepared prior to the session. (See Appendix A for recommendations made and the Census Bureau's responses.)

#### Chief Economist Update (AEA)

Dr. Jensen (U.S. Census Bureau) reminded the subgroup that the Center for Economic Studies (CES) underwent intense scrutiny as a result of the Internal Revenue Service's (IRS's) "safeguard review" which began in 1999. There were several issues involved in the review, most importantly the comingling of data that the Census Bureau has historically viewed as census data. The IRS has asserted that these data must be treated as tax data, the use of which requires IRS approval. The IRS also questioned if special-sworn status was sufficient for access to confidential Federal tax data.

In April 2000, the IRS requested that all projects at the CES be approved by their reviewers or be halted by September 10, 2000. The Census Bureau had to certify to the IRS that all unapproved projects had been stopped. In response to Federal statistical agency (Census Bureau, Bureau of Economic Analysis, Social Security Administration, etc.) concerns about the impact of this deadline, the Office of Management and Budget (OMB) sponsored discussions in August 2000, to resolve the agencies' issues. The result of these discussions was the "criteria document," signed on September 15, 2000.

The "criteria document" requires that the IRS be involved in the review of all CES projects using federal tax data. The document also defines the criteria used for proposal review. It states that the predominant purpose of a project must be to improve Title 5, Chapter 13 programs. Special-sworn status for confidential microdata and Federal tax data is protected.

Because of the September 10, 2000, deadline, the CES halted the solicitation of new projects in March 2000. However, as a result of the OMB-sponsored discussions, the IRS did not enforce the deadline, and ongoing projects continued without disruption.

In December 2000, the IRS and Census Bureau participated in a proposal review meeting, after which the IRS approved 4 of 28 project proposals. Soon after this initial review meeting, the Census Bureau began working with the IRS's Statistics of Income staff to develop a proposal review process that would work for both agencies.

By Spring 2001, the IRS no longer required that it participate in the proposal review meetings. Instead, the Census Bureau forwarded its approved projects to the IRS for review. Since this revision to the proposal review procedures, the IRS has approved all but two projects. One of the disapproved proposals required a slight modification, after which it was approved. The second proposal is still on hold because of statutory issues. The IRS has not indicated its refusal to approve this project, but has requested additional time to permit their council to review the proposal.

Dr. Jensen said that as a result of the new proposal review criteria, the CES needs to manage the research communities' expectations about the CES program. The Federal statistical community also must be educated about the value of the CES program.

He noted that the CES has witnessed enormous growth since its inception. However, as a result of this growth, the program may have lost a sense of partnership between the research community and the Federal statistical system. The CES is working to reinvigorate this sense of partnership.

Dr. Jensen said that increased IRS vigilance has resulted in several changes to the CES program. The proposal review process is more cumbersome and lengthy. Researchers will also be obliged to



provide the Census Bureau with reports about what they have learned from their projects and the benefits their work has for the Census Bureau.

He noted that researchers at the Research Data Centers (RDCs) have begun new projects and operations are returning to “normal.” The Census Bureau and National Science Foundation have approved a new RDC at the University of Michigan and he believed approval was nearing for an RDC in Chicago, IL. This renewed expansion of the RDC program further indicates that the Census Bureau believes the earlier issues between the CES program and IRS have been resolved.

In response to a question by Dr. Goolsbee, Dr. Jensen said that at the beginning of the RDC program a handful of researchers were chosen to relocate to the Census Bureau and commit to long-term research projects. They worked closely with Census Bureau staff. As the program has expanded, the Census Bureau has not managed the knowledge developed through the program’s research. The Census Bureau must capture what researchers have learned from their projects.

Dr. Knickerbocker added that in order for the IRS to approve most projects, the Census Bureau must demonstrate that the projects have scientific merit and that they benefit the Census Bureau. Benefits to the Census Bureau can include a better understanding of the data and/or data gaps, development of new databases, etc. In the past, researchers used the data, wrote their papers, and any benefit to the Census Bureau was purely incidental. To preserve the Census Bureau/IRS relationship, researchers now must demonstrate that the Census Bureau will be a benefactor of the project. This may require that in the process of completing an academic paper, the researcher also will generate additional pages that explicitly define the benefits to the Census Bureau.

Dr. Goolsbee asked what aspects of project proposals raised objections from IRS reviewers. Dr. Jensen said that in 2000, the IRS was very conservative and had a very narrow interpretation of how research could benefit the Census Bureau. The emphasis was on improving the sampling frame, not content or data quality. Since Spring 2001, the Census Bureau is more careful in its project presentation and has worked with researchers to craft proposals that the IRS will approve. As a result, the IRS has been convinced to expand its interpretation of how proposals will benefit the Census Bureau.

Dr. Knickerbocker said that the Census Bureau has been adamant in explaining to researchers that their proposals must have clearly defined benefits for the agency. He added that he could not recall an instance where the scientific merit of a proposal had been questioned.

Dr. Pakes said that the CES must be aware that participation in the program requires a substantial sacrifice. Researchers must have adequate funding and they must relocate. The purpose of the RDCs was to make access to data easier, especially for young researchers. The CES should not expect that all researchers will be able to relocate to the Suitland, MD, area for long-term commitments. The empirical research that these researchers will perform can be risky. Asking them to also make major life changes further complicates their ability to easily access data. Adding additional requirements to proposals further hinders data accessibility. The inaccessibility of data is evidenced by the fact that few senior researchers are willing to involve themselves in the type of research being performed at the RDCs.

Dr. Jensen said that the additional requirements resulting from the IRS’s involvement are not overly severe. The RDC researchers have routinely performed work that benefits the Census Bureau. In the past this work, like “cleaning” a data set, was simply not reported—it was a byproduct of the

research being performed. Emphasizing such a byproduct in the proposal can meet the requirements of the IRS's proposal review.

Dr. Jensen apologized if his tone was too stern regarding researchers past use of data; however, the RDCs had become too much of a data "grocery store" where people paid for access and left without providing a service to the Census Bureau. Dr. Goolsbee suggested that the CES provide researchers with examples of how proposals benefit the Census Bureau. Dr. Knickerbocker said that at the beginning of the proposal process, researchers are strongly encouraged to contact the CES. The CES will walk researchers through the entire proposal process.

In response to a question by Dr. Greenstein, Dr. Jensen said that the Census Bureau accepts project proposals every 2 months. An explanation of the process can be found and proposals are submitted at the Web site [www.ces.census.gov](http://www.ces.census.gov). Proposals are reviewed at the Census Bureau within 2 months. After the "predominant purpose" statement is attached to the proposal, the submission is sent to the IRS, where reviews have typically been completed within a month. Although the process has been lengthened, Dr. Greenstein noted that when compared to other proposal reviews, the CES process is quite fast.

In response to a question by Dr. Goolsbee, Dr. Jensen stated that the majority of revisions are required to articulate a benefit to the Census Bureau. Dr. Knickerbocker added that about one-third of proposals using tax data require revisions prior to submission.

In reply to Dr. Greenstein's question, Dr. Jensen said that there are costs associated with the CES program. Access to the RDC 2 days a week costs \$1,200 a month, or \$15,000 annually.

Dr. Betancourt asked if the relationship between the Census Bureau and IRS was stable. Dr. Jensen said the current relationship was tenuous. There is one person reviewing proposals within the IRS's Statistics of Income Division. The Census Bureau has a very good working relationship with this person. However, Dr. Jensen could not predict what the outcome would be should this person be transferred to other duties. He said he believed there was commitment at the higher levels of the IRS to make this relationship work.

Dr. Knickerbocker added that the entire process did not rest on the shoulders of a single person. The issues behind the IRS reviews are the result of beliefs held by the upper levels of the U.S. Treasury Department. The issue of confidentiality of IRS data is a department-wide concern. Their greatest concern is to protect the data they are collecting.

In response to a question by Dr. Goolsbee, Dr. Knickerbocker said that, as Associate Director for Economic Programs, he is ultimately responsible if researchers use data to which they should not have been given access.

Dr. Jarmin (U.S. Census Bureau) offered a slide presentation, titled, "Longitudinal Business Database."

In response to a question by Dr. Greenstein, Dr. Jarmin said that the Dunn & Bradstreet study of establishment births and deaths did not identify deaths well. Deaths are not removed for several years after the establishment goes out of business. He said he believed the Longitudinal Business Database (LBD) will more accurately portray establishment births and deaths.

In reply to Dr. Pakes' question, Dr. Jarmin said the economic variables within the LBD are employment and payroll, industry, geography, firm ownership, and flags for linkages.

In reply to a question by Dr. Knickerbocker, Dr. Jarmin said that all the 1997 Economic Census files are now on the LBD.

In response to Dr. Browne's question, Dr. Jarmin said that the RDCs have not received the entire LBD because of the size of the file, which the RDCs may not be able to handle in its entirety. This may be resolved once the new computer system is operational at the RDCs. He noted that on a case by case basis, subsets of these data are provided to researchers at the RDCs.

In reply to Dr. Pakes' question, Dr. Jarmin said there is not a map of the database. Dr. Pakes suggested that a map of what is available and what these data can be linked to would be very useful to researchers.

Dr. Jensen said the CES and RDCs are interested in expanding the scope of data available to researchers. The CES has invested resources to provide data on all sectors—not just manufacturing. The CES continues to provide broader sector coverage and increased historical data. Household and individual data are an additional area of expansion.

He noted that researchers have sought long-form questionnaire data prior to 1990. The CES would like to provide these data, however doing so will not be without challenges. The greatest obstacle will be migrating these data from the Legacy platforms on the UNIVAC computer to current platforms. In the past, disk space was more expensive than programmer salaries. As a result, the Legacy platforms saved as much disk space as possible using proprietary programs. Today, disk space is cheap, and programmer salaries are high. Not only will it be expensive to extract data from the proprietary programs, it also will be difficult finding programmers who still possess the skills necessary to work with the Legacy platforms.

Once data has been extracted, it must be checked to ensure the data on UNIVAC transferred accurately. This work is currently a joint CES and Population Division project with support from the University of Maryland. Once the data are verified and documented, they can be made available to approved projects at the RDCs.

In response to a question by Dr. Greenstein, Dr. Jensen said that several economic and demographic surveys are sponsored. The availability of these data are constrained by the requirement that the survey sponsors give permission for their release to researchers. Some surveys have multiple sponsors. For example, a homeless survey conducted by the Census Bureau had 11 sponsors. Permission must be received from each sponsor before the data can be released.

In response to a question by Dr. Goolsbee, Dr. Jensen said that the Census Bureau collects data under Titles 13 and 15 of the U.S. Code. Title 15 data applies to demographic data, not economic data.

Dr. Jensen said the creation of a data warehouse has been an ongoing effort for the CES. With the large amounts of data being stored, the CES must determine how to organize and administer the data. Progress on the data warehouse has been slowed by the work on the new computer infrastructure at the RDCs.

Dr. Jensen noted that the CES must provide documentation for all the data that are not associated with public-use microdata samples, which includes all economic surveys. This is a challenge to researchers expecting to find fully documented data at the RDCs. As a result, researchers can include in their proposals that their project's benefit will be to provide documentation to a newly opened data set.

In response Dr. Goolsbee's question, Dr. Jensen said the CES's greatest constraint with these newly available data is the lack of experience the CES and RDCs have working with them. The CES must manage researchers' expectations during the proposal process so that they will understand that the CES will not have public-use documentation for all the data it is providing.

Dr. Jensen said that the CES continues trying to locate and make historical data available. "Lost" computer tapes continue to be rediscovered. When these are found, every effort is made to salvage the data and make it available to researchers.

Dr. Roberts asked if the lessons learned from working with historical data sets have had any impact on the way data will be collected in the future.

Dr. Jarmin said that data are not universally collected by firm or establishment. Dr. Knickerbocker added that at an earlier session, alternative reporting units were discussed. These will further complicate the bridging of current and historical data sets.

In response to a question by Dr. Pakes, Mr. Mesenbourg (U.S. Census Bureau) said that for retail, wholesale, services, and the monthly and annual programs, subnational data are not published. The burden that would be imposed by moving to an establishment base would be huge. Currently the Census Bureau asks companies to aggregate their establishments up to an industry level, creating a "pseudo reporting unit" that is between an establishment and an enterprise, but based on the North American Industry Classification System industry level. Dr. Jarmin noted that the Census Bureau is working with its statisticians to build into the data registers some details that will make linkages between historical data sets easier.

#### Interviewer Refusal Aversion Training (ASA, PAA, AMA)

Dr. Mayer (U.S. Census Bureau) discussed the paper, "Interviewer Refusal Aversion Training at the Census Bureau." Initial response rates are decreasing for ongoing Federal household surveys, but there are some innovative interviewer training methods designed to improve these rates. The training is built on a theoretical understanding of the early interviewer-respondent interactions that influence survey participation.

Interviewer-administered surveys allow interviewers to influence respondent participation because they can generate person-level, customized appeals. Interviewer training, however, often is inadequate in developing skills to effectively engage respondents in this way. Interviewers feel ill-prepared to answer respondents' questions, communicate the purpose of the survey, and establish and maintain rapport with the respondent.

Based on the concepts of tailoring and maintaining interaction, researchers have recently examined a theory-guided training protocol designed to enhance interviewers' skills in avoiding refusals. This paper describes the first application of their training protocol to the household telephone-

survey context. As hypothesized, first-contact cooperation rates increased in the range of 3-to-7 percentage points for interviewers who participated in the refusal-aversion training and as much as 14 percentage points compared to those who did not receive the training. Additional research is underway that attempts to study the training effect in a face-to-face interviewing environment. Staff resources would be needed to develop this training further for in-person, interviewer-respondent interactions as well as for specialized survey inquiries (special populations, one-time versus longitudinal designs, etc.).

Dr. Mayer pointed out that the paper raises three questions for the Census Advisory Committee of Professional Associations—

- ! Research shows that refusal-aversion training methodology can reduce unit nonresponse in telephone surveys. How should the Census Bureau implement this training in its censuses and ongoing surveys? Are there other research questions that should be addressed through experimental testing prior to implementation?
- ! This refusal-aversion training methodology includes tasks requiring a fairly high level of skill of the trainers (e.g., facilitation skills, skill in offering feedback to reorient trainees toward desired behaviors, ability to conduct specialized exercises that mimic the fast pace of interviewer-respondent interactions, etc.). On whom should the Census Bureau rely to carry out this kind of training (e.g., current training staff, specialized staff, contractors, etc.)?
- ! Implementing refusal-aversion training methodology will be challenging. Monitoring and evaluation should be an integral part of implementation. What research should be conducted to support management decision about: (1) who should receive the refusal-aversion training; (2) when they should receive it; and (3) how often it should be repeated? How should the Census Bureau monitor and evaluate the effect of this training on unit nonresponse and interviewer behavior?

Dr. Lee (Population Association of America [PAA]) commended the Census Bureau's efforts to combat sliding response rates. The theory on which the agency is basing its refusal-aversion training is compelling and the training protocol seems reasonable. The key question is how confident can decision makers be that the benefits of implementing this training will justify the investment or the costs involved. It seems that most of the issues regarding the training should be addressed by its larger replication within the National Health Interview Survey (NHIS).

There is a technical point concerning the process in which the interviewers were assigned to the two-treatment groups, plus a control group, before the cases were given to the interviewers. It is not clear how these interviewers were assigned to the treatment and control groups or whether the equivalence of those groups was checked. There is some concern because of the small number of interviewers in the first study. It is important to ensure that the groups were more or less equivalent at the beginning of the training in order to make sure that the training effect is not attributable to distinctive characteristics of the interviewers or the pool of cases assigned.

Another issue that the Census Bureau needs to consider is the duration of the training effect. There is some suggestion that the training effect begins after 2-to-3 weeks, but little is known about what happens afterwards. In fact, there are a number of plausible trajectories—the training effect might level off or there might even be decay when people become more comfortable and perhaps sloppier while using the training protocol. It is important to look at these issues,

specifically in relation to how long Census Bureau surveys are typically in the field. The agency might discover that the training effect lasts a relatively short period of time and that the interviewers need a booster during the project.

There are other types of effects the Census Bureau may wish to consider besides the initial cooperation rate. The paper mentions the use of debriefings, so some before-and-after data from the interviewers on their comfort levels would be welcome. Also, the supervisors should have an opportunity to monitor the interviewers' performance during their interviews.

The fact that the Census Bureau is using theory to guide its research is encouraging, but it is important to know if the training is affecting those aspects of interviewer behavior that the theory predicts it will. In what percentage of cases where there was respondent hesitation or concerns did the interviewers actually succeed? Were the respondents' issues addressed using the refusal-aversion training techniques? Did the interviewers utilize the training's verbatim rebuttals in a quick and smooth fashion? At present, the answers to these questions are inferred from the initial cooperation rates rather than those aspects of interviewer behavior being directly measured.

Ms. Stershic (American Marketing Association [AMA]) lauded the Census Bureau for conducting this training research as a means to reduce respondent refusals. The AMA subgroup strongly encourages the adoption of this type of training as well as the expansion of similar training both for in-person and telephone interviews.

In response to the question about how the Census Bureau should implement this training in its censuses and ongoing surveys, as the agency undertakes and refines its training with additional testing, it should become a standard part of training for all interviewers. Implementation will depend on training resources and needs-based assessments determined by response rates and interviewer performance.

As for who the Census Bureau should rely on to carry out the training, given the high level of skill required of the trainers, the decision depends on resources available and whether the agency's current training staff can handle the load. The AMA subgroup suggests that the training staff develop an implementation plan including an assessment of whether this training can be handled by current staff or needs to be outsourced.

Regarding the question about what research should be done to support management decisions concerning who should conduct the training and when it should be conducted, the answer will depend on the Census Bureau's internal assessment. The agency's divisions and supervisors should be able to track changes in response rates compared to a benchmark of past performance, by interviewer. Also, in addition to the behavioral results, training programs should make use of trainee and trainer evaluations to track continuous improvement in both program and content delivery.

The success of any training program requires management support. Careful consideration should be given to communicating the importance of this type of training to ensure that management "buys into" the concept so that supervisors can reinforce the skills that are learned and applied by the interviewers. An organization can have the greatest training program in the world, but the program is not going to work if management balks at giving the staff time to attend the training and then does not reinforce it afterwards.

Also, consideration should be given to the process of updating and sharing the refusal-aversion handbook, a tangible document that can evolve as the interviewers themselves continually build on what works and what does not while dealing with respondent aversion. The interviewers should be comfortable in making the handbook a living document and working with it over time. There needs to be a way to share the handbook among interviewers, especially those needing remedial support as well as new trainees.

Dr. Belen (American Statistical Association [ASA]) praised the paper and the agency's refusal-aversion research program in general. He added that there might be issues pertaining to what kind of data are being captured and quality-control databases, so the Census Bureau can do before-and-after comparisons between exposed versus unexposed interviewer training.

Dr. Belen then shared an experience while he was employed by the Census Bureau during the 1990 census. During this time, he was sent from headquarters to observe a follow-up interviewer in Providence, RI. During the drive from Boston, MA, to Providence, the interviewer asked him a lot of questions about the post-enumeration survey. It was clear that she was an intellectually curious person but did not know much about the "downstream" purposes behind her interviewing assignments. Providing information about these downstream purposes was intended to serve a double purpose—to help with the quality of data collected and to enhance morale.

Dr. Belen said one interview really stood out because most people would have never been able to get an interview in one particular household. After returning to that household a couple of times, the interviewer finally bent down at the mail slot, which was in the middle of the door, and shouted up a staircase and kept shouting until the person came to the door and gave her the interview. He added that he was struck that the interview was an e-sample follow-up and what was at issue was whether the respondent's 19-year-old son should have been counted in that housing unit or another housing unit. He noted that he had been unconvinced that the interviewer got the right response. She characterized it as a correct enumeration because she had convinced the respondent that her son belonged in that housing unit, but the real issue was the census residency rules, which was the whole purpose of the follow-up visit. Maybe more detailed information to the interviewer about the reason for the follow-up would have been important, but nonetheless, it underscored the need for more training.

As for whether to outsource the training or conduct it in-house, Dr. Belen said that it is difficult to provide a definitive answer, but his observation of matching clerk training in Jeffersonville, IN, during the 1990 census suggests that it would be possible to do it at the Census Bureau. An alternative might be to capitalize on the close relationship with the Joint Program in Survey Methodology.

Dr. Mayer said that in the pilot study of the refusal-aversion training, the interviewers were assigned to groups and stratified by level of experience and on whether they had any previous refusal-aversion or avoidance training. Ms. O'Brien (U.S. Census Bureau) added that the previous experience that these interviewers had with refusal-avoidance training was a workshop, which was very unlike the training during the pilot study. The workshop essentially was an informal meeting designed to facilitate interaction among the participants about what they were hearing and saying to the respondents, and there was little cause for concern about its influence or impact on the interviewer trainees.

Dr. Mayer said that the Census Bureau conducted interviewer debriefings, which were helpful and indicated that the interviewers' level of confidence had increased, according to both the interviewers and their supervisors. The training provided them with additional skills and allowed them to go into the workplace and address situations with a confidence that they had not felt before and that the supervisors said they had never seen before.

Ms. O'Brien said that with low unemployment, the agency struggles to find people who can do this kind of work, and it sometimes has to accept people who have difficulties dealing with reluctant respondents, especially over the phone. There were a number of introverts at the Hagerstown, MD, telephone facility who would say such things as, "Before, when I used to get a refusal list, I'd want to run," or, "I never felt comfortable working through reluctance and stating the importance of participating in this survey. I didn't feel confident in my role." So, although the training teaches the interviewers how to interact with the respondents, it also teaches them about their professional role as an interviewer and the legitimacy of the inquiry.

In the case of the National Health Interview Survey (NHIS) that the Census Bureau is doing now, the more-experienced interviewers are very good at quickly relaying key information about the legitimacy of the survey requests. Dr. Mayer added that a goal of the training is to transfer the expertise of the experienced interviewers, who are involved in creating the materials for the training, to the less-experienced interviewers.

Dr. Lee (Population Association of America [PAA]) asked if the Census Bureau has audio tapes of the telephone interviews or if the agency does any quality-control monitoring. Ms. O'Brien said that the agency has the capacity to listen in on any of the interviews at its telephone facilities. Dr. Lee said that it would be possible then to identify those cases in which the respondents raised questions or had some initial hesitation to determine the percentage of those cases converted to successful interviews.

Ms. O'Brien said that the Census Bureau conducted a pre- and post-training evaluation in which Dr. Mayer sometimes served as the confederate by reading the "top-ten" concerns over the telephone to the interviewer, who had to respond quickly with an appropriate rebuttal. The agency now has a number of behavioral examples that interviewers were using prior to training and the adjustments they made to those behaviors that were revealed in the post-training evaluation.

The interviewers were quite aware of this change in their behavior. One interviewer said, "Well, when I would get some reluctance, I used to just say everything I could; I'd say this, I'd say that, I'd talk for a very long time. As long as I could keep talking, I knew they weren't going to hang up on me. But with this training, I was able to focus and make my response to their concerns more clear and brief and give them a turn, and I'd know when to stop and when to move on." This person had 3-to-5 years of experience.

Not all the new interviewers are ineffective, nor are all the experienced ones as accomplished as they should be; each has some area in which the training will improve their behavior. The agency is developing a method to evaluate the interview tapes, but they will be used as a management tool by the telephone monitoring staffs, perhaps in a telephone facility, or centrally through the regional offices.



In response to a question by Dr. Lee as to whether the Census Bureau is investigating how long the training effect lasts, Dr. Mayer said that the pilot study was an experimental survey with a very short duration, but now there are data from both the control and treatment groups for the NHIS study. Pretraining data now are available, so there is a baseline for both groups. There will be 4 months or more of data after training because the agency would like to know how long the training effect lasts. What is not known at this point is when the training effect levels off and whether there is any deterioration after that point, which leads to questions such as should there be a refresher training at some point and where the best point is to implement that training.

In response to another question by Dr. Lee regarding the percentage of respondents having concerns or showing reluctance, Ms. O'Brien said that, anecdotally, interviewers and field representatives are reporting that about half the respondents have to be talked into participating in an interview. The issue is how the interviewers are persuading respondents to comply. Some of the behaviors are effective and some are not. The training provides the interviewers with some tools or effective behaviors. Having to convince half of the respondents to comply is hard work, and the interviewers feel really good if they can make a reluctant respondent understand the purpose of the survey, or if they can alleviate the respondents' concerns to a point where they will consent to an interview. The interviewers are extremely positive about this training, and Ms. O'Brien said she personally felt good about this particular aspect of the training. The Census Bureau is putting these interviewers into difficult, sometimes dangerous, situations, and anything that can alleviate this kind of stress is a positive thing.

Dr. Mayer said that one of the interviewers characterized the training exercises as different from the other refusal-avoidance workshops. Such comments lead those responsible for the training to believe that it contributes to the interviewers' overall confidence level because not only do they learn the process as they slowly step through it, but they also are building their skills and their ability to apply these techniques to real-life interviewing situations.

In reply to a question by Ms. Stershic, Ms. O'Brien said that the training staff at Census Bureau is aware and involved in the refusal-aversion training. There is a blue-ribbon task force in place that is evaluating all of the agency's training. One of the major concerns is training transfer from research to production. She said, as a researcher, she understands the theoretical aspects of why the training may be working, and the agency is trying to experimentally measure what seems to be working. There is a firm in Arlington, VA, that just recently won a contract to develop some of the training components for the task force, and Dr. Mayer and Ms. O'Brien continue to communicate with that task force to share expertise in developing training for these ongoing programs.

Dr. Mayer said the Census Bureau also is working closely with, and receiving input from, the Joint Program in Survey Methodology. Ms. O'Brien added that the agency has provided funding to that organization to further this research.

In response to a question by Dr. Belen regarding data quality, Dr. Mayer said that the evidence so far suggests that the refusal-aversion training can affect not only unit nonresponse, but item nonresponse as well. So, it should be possible to adapt the training to deal with particularly sensitive questions, such as income.

Ms. O'Brien said that refusal-aversion training should be adaptable to all censuses and surveys. The Census Bureau is building a larger pool, or database, of all the types of concerns respondents

may have. It is always important to remind people, however, that the agency is not developing a textbook with “pat” answers for standardized respondent questions. The goal is to train interviewers to adapt to particular concerns on an ad hoc basis in a quick, clear, and efficient manner. The training handbook has examples of what interviewers might hear and how they might respond, but oftentimes the training elicits much better examples of respondent concerns and more useful interviewer responses.

Dr. Mayer stressed the importance of individual differences among interviewers and said that what might work for one interviewer might not work well for others. So, the training exposes the interviewers to the refusal-aversion process and encourages them to use that process to identify what the respondents’ concerns are and then adapt their approach to the specifics of the situation.

Ms. O’Brien said that one can acquire a much better understanding of the data quality by seeing how it is obtained from the respondent. Also, these experiences foster a much greater appreciation for what the interviewers have to go through with those 50 percent who have to be talked into responding to the survey.

What came up a lot during the training was the “downstream” purposes of the data collection. The interviewers do have a number of complex questions about what these data are for; they know a bad survey when they see it, and they quickly spot the question that is going to be challenging when they have to ask it in the field. Knowing the purposes of the questions serves to bolster the interviewers’ conviction that they are conducting a legitimate data collection. Many times when there is a mixed pool of novice and experienced interviewers, one can observe a lot of exchange about why the data are relevant and the role of the data in defining policy issues.

Dr. Etzel (AMA) said what struck him was the similarity between the interviewers’ refusal-aversion encounters and the classic sales situations in which salespeople find themselves. Basically, salespeople are faced with objections, which they are trained to recognize and overcome. Corporations, all the way from IBM training engineers to be salespeople, down to direct marketers training people without even a high school diploma, are training people to make calls over the phone, even “cold calls”. As irritating as many of these people are, some are actually well trained. There is a wealth of information, literally thousands of experiences, from training organizations in the private sector that could be very useful to the Census Bureau.

There is a literature that has developed over the last 20-to-25 years, and has become much more sophisticated over time, which is referred to as “sales force” management. It is a theory-based, as opposed to a common-sense, trade literature in which theories from all the behavioral disciplines are being applied, studied, and evaluated in the context of sales situations. Much of this literature is available on the Internet. One Web site in particular is the AMA’s [www.marketingpower.com](http://www.marketingpower.com), which probably contains most of this information.

Ms. O’Brien said that there are some important distinctions between sales in the private sector and surveys in the public sector. When sales people contact 10,000 households, they are not concerned if 9,500 do not respond. Five hundred sales may be an acceptable, perhaps excellent, result in most sales situations. The goal in a statistical data collection is 100-percent response, and the survey takers often have repeated contacts with the same households, so most maintain an ongoing, neutral relationship with respondents.

When the survey takers are pushing for an interview, they are in fact trying to get to that point where they have minimized the respondent's tendency to say no. They are not maximizing the respondent's tendency to say yes; they are just allaying the respondent's concerns by making the conversation continuous to the point where an interview can be conducted. Sometimes the interviewer even has to be able to say, "Well, maybe this is a bad time; we'll come back some other time." Sometimes it even might be necessary to switch interviewers—if it is a health survey, for example, and there are health issues that the respondent might not want to discuss with a particular interviewer.

Also, there is a tendency when dealing with reluctant or disgruntled respondents to avoid a sales posture which could have the agency perceived as being obnoxious.

Mr. Garrett (ASA) said that although there are differences between sales and surveys and between the private and the public sectors, one of the common strategies that good salespeople and survey takers both adopt involves the identification of the barriers and how to overcome them. The paper, for example, lists 10 possible barriers to the successful completion of an interview. The Census Bureau is trying to remove barriers, and it needs to know what these barriers are, whether there are in fact 10 or only 5, or if there are 10 more that the agency has not identified. Every time the agency conducts refusal-aversion training, it has the opportunity to collect more data to apply to future surveys. Sometimes, the respondents/customers do not tell you why they are not cooperating, or if they do tell you, what they say may not be the real reason, and this is common to sales and surveys.

He added that those interested in refusal-aversion training at the Census Bureau might want to check out a paper by Jim Massey and Brenda Cox that quantifies some of the decline in response rates to various surveys up to about 1996-97. One of the worrisome things about surveys is that if one is not careful, he or she can become increasingly more at ease with declining response rates.

Dr. Belin said that, given the importance of the exercises that simulate actual experience, he would favor a Census Bureau decision to provide its training in-house, since doing so would allow the agency to use real data examples from previous cases that would be covered by title 13 protection. The agency could integrate these examples into its training more easily than it could if the training were outsourced.

#### Promoting Business Response to the 2002 Economic Census (AMA)

Mr. Marske (U.S. Census Bureau) said that in earlier sessions, the members heard about all the data the Census Bureau hopes to collect in the 2002 Economic Census. However, asking for new data will not be of any use if the businesses covered by the census do not complete and return the census questionnaires. Today, he said he will review plans currently in place to improve response to the census, and will ask the members for their advice on any further activities that would help achieve earlier and more complete response.

In December 2001, the Census Bureau will mail out the Company Organization Survey, sending questionnaires to 50,000 large companies throughout the country and using the responses to update its mailing lists for the 2002 Economic Census. Most of the 2002 questionnaires will be available by next spring, and the census mailout itself will take place in December 2002, with response requested by mid-February. The first results from the 2002 census should be issued

about 18 months from today, with the detailed data from the enumeration published over several years following that first release.

Mr. Marske reviewed the response research and improvements for the 2002 Economic Census described in the background paper ("Promoting Business Response to the 2002 Economic Census"). He noted that the Census Bureau has redesigned the census report forms to make them easier to handle and to read, developed a new electronic reporting instrument to encourage electronic reporting in place of paper response, and is working on an automated Web-based business help site to supplement the toll-free telephone numbers used in previous censuses.

The "bottom-line" is that late response, especially by large companies, delays the completion of the census and the publication of the census results. For the 1997 Economic Census, approximately 100,000 establishments did not respond by October 1998. Any hope of accelerating the timeliness of the economic census data depends on convincing those companies to respond earlier in the census cycle. The Census Bureau has tried various methods of obtaining response from large delinquent companies, including letters to the chief executive officers signed by the Under Secretary of Commerce. For 2002, measures proposed to improve response include earlier contacts with the companies involved, and having senior Census Bureau staff—e.g., Dr. Knickerbocker and Mr. Mesenbourg—act as account managers for some firms.

Mr. Marske asked the members to consider the following questions—

- ! What else can the Census Bureau do to encourage timely business response to the economic census, particularly by large companies?
- ! What steps can be taken to raise intermediary interest in promoting economic census response?
- ! What else can be done to promote the use of the Business Help Site and the electronic reporting tool by business respondents?
- ! What research needs to be done in the coming months to identify persuasive themes for encouraging businesses to respond to the census?
- ! What research should be undertaken during the census to evaluate census response improvement efforts and identify factors affecting response behavior for future censuses?
- ! How has the terrorist attack on September 11, 2001, changed things?

Dr. Haas said that the Census Bureau seems to have picked the right things to look at in its attempt to improve response. He noted that budget resources are always a problem, and many of the difficulties cited in the background paper could be reduced or eliminated with more resources. For example, public service announcements are useful, but they are seldom run in prime time. A paid-advertising campaign that could place these ads in better time periods would be nice, but it is unlikely the agency will be allowed to underwrite such a campaign.

The legal requirement for response is a great advantage for the Census Bureau's data-collection program, and it is not surprising that the focus groups' response indicates that the legal requirement is a major factor in encouraging response. However, the fact that the agency still

does not get 100-percent response suggests that while the legal requirement is important, it is not the only thing that is needed. The Census Bureau should test alternative messages—not as replacements for the notice that response is required, but to supplement that information. Part of the reluctance to respond undoubtedly is related to difficulty in responding, and the Census Bureau should test messages that would emphasize ways to make response easier, such as the proposed help line and online response.

The Census Bureau's work to improve its cover letters is important. Cover letters are a critical part of communications with respondents, and the agency should continue to test improved versions of the cover letters in focus groups and in its various surveys.

The account manager program is a good idea, but it is not clear from the background paper whether the account managers are assigned this job as a collateral duty. It is important that work as an account manager be assigned sufficient priority that assigned staff know how critical the job, and their performance, is to the data-collection effort. Segmentation within the 1,000 companies that will be part of the account manager program will be important. A certain portion of these firms will not need the kind of prodding and hand-holding others will require to complete their questionnaires and get them back to the Census Bureau. The agency should look at ways to identify the companies that need the most attention, and devote more resources to those companies.

Dr. Haas suggested the Census Bureau explore the possibilities of using other federal agencies' operations to help promote the census. It may be possible to "piggy-back" Census Bureau materials on other agencies' mailings. He added that the Federal Government's web portal actually was selected as a Yahoo "cool site", and he suspected that as that portal becomes more visible to the public, it will get more activity. The Census Bureau should lobby with whoever runs that portal to get its census announcements and banner ads displayed there.

The Census Bureau should approach trade associations and other organizations that have a vested interest in the data to help promote the economic census. Most of these associations have newsletters, magazines, or other publications that could be used to communicate with their members, and they might well be willing to cooperate with the agency in running public service announcements or ads. If they are not willing to do this on a cooperative basis, these outlets may be a place where the Census Bureau might want to spend any resources it has available for paid advertising.

The Census Bureau should try to get on the agendas of business and trade association conferences and meetings as well. The agency already has a program of setting up booths at some of these activities, and this should be continued and expanded as much as possible.

With regard to focus group research, Dr. Haas suggested the Census Bureau test possible census promotional themes, as well as testimonials from recognizable leaders of the business community, and, particularly, prominent leaders of specific industries.

Dr. Haas said he had no idea what the effect of the September 11 attack might be. By the time the 2002 Economic Census is rolled out, there may be a new definition of "normalcy," and the impact will be minimal. The Census Bureau should not "retool" its promotional effort yet because it cannot know how this situation will pan out.

Responding to a question by Ms. Stershic, Mr. Marske said the Census Bureau has designed the helpsite to provide the knowledge base for the agency's toll-free telephone operators. The same information will be available to the public from the helpsite as will be provided via the telephone inquiry number, and the agency will monitor the number of "hits" on the various pages of the helpsite, which will show the kinds of information the public is trying to find. The Census Bureau also will look at the kinds of e-mail it receives, to determine if and how it needs to retool the helpsite. He noted that the frequently asked questions on the site will be available to users as well. Other services also will be available from the helpsite, such as the ability to request a different questionnaire, or to request an extension for response.

Ms. Stershic encouraged the Census Bureau to monitor the kinds of calls and questions it receives through the toll-free number to see who is calling, whether they specifically needed to talk to a person, and what kinds of problems are driving them to use the toll-free line rather than the Web site. Mr. Marske noted that an important consideration in designing the toll-free telephone number was that it would involve a live operator; there is not voice-mail system involved.

Mr. Adams commented that the Census Bureau seems to have a very good plan in place. He noted that a key issue from the decennial census operation has been the notion, brought in by the advertising contractor (Young & Rubicam), of "what's in it for me?" That is probably the best motivation for obtaining response. He said he is intrigued by the notion of urgency in responding as quickly as possible. The direct marketing people have done work on this idea, and have developed some procedures for encouraging people to respond quickly, and the Census Bureau may find it useful to consult them before "going live" with its own plans.

The proposal to use testimonials from people such as Alan Greenspan is a good idea, but the target audience for the economic census is very peer oriented, and similar testimonials from known leaders of the various industries would be especially helpful.

With regard to the idea of using broadcast advertisements, Mr. Adams noted that public service announcements (PSAs) are all very well, but the 2000 Census proved the value of paid advertising in placing advertisements where they will be seen or heard by the target audience. He suggested the Census Bureau set specific objectives—e.g., placement of census PSA's in the front quarter of *Fast Company, Inc.*, *Forbes*, *Fortune*, *Barron's*, etc.—then go to the publishers and try to get those messages placed front-and-center and not buried in the back of the magazines.

With regard to "9-11" he was uncertain what should be done. There is a danger in trying to link any sort of message to that event. Anyone doing this should be aware of the danger of trying to wrap themselves in the flag at this point. The Census Bureau should consider this question in its focus group research. The testimonials could suggest that responding to the census is a civic duty, or a patriotic one, but there is danger of a backlash of sorts if the Census Bureau is too obviously trying to wave the flag to obtain response.

Dr. Etzel said that if he had to pick one effect of "9-11," it is that Congress and the President are spending an incredible amount of money, that will have to come from somewhere. If inflationary pressures rise, there will probably be cuts in other government programs, which means the Census Bureau might well find itself with significantly reduced budgets in the not-too-distance future. This is an unpleasant possibility, so the agency had better start thinking about how it will adjust to this situation sooner rather than later.

He added that he wanted to encourage the Census Bureau to work with trade and association publications to get the economic census story out to the public. These magazines are not enthusiastic about using up their advertising space on PSAs, but they are always interested in getting good stories about significant topics to publish. The Census Bureau should try to find stories about how people in various industries have successfully used census data in the past, and then either encourage someone to write up the stories, or even have Census Staff draft part or all of each article, for submission to the media outlets. These success stories also could be used by the account managers while they are working with companies that are slow or reluctant to respond.

He added that a further issue with the account manager program is that, in the corporate world, there is a question of level-to-level issue that arises. He did not know who the Census Bureau may be contacting in this program, but establishing credibility may require having more senior people involved in contacts with companies. There also needs to be some system that acknowledges the importance of the work being done by the account managers.

Dr. Etzel commented that earlier the subgroup had discussed encouraging response to questionnaires, and one of the members had pointed out that, as a general rule, the more frequently the Census Bureau contacts someone, the more likely it is that there will be some kind of response. This can be carried too far, but the basic idea remains sound. He wanted to reinforce the agency's approach of pre-contact and pre-notification about the census. The timing of the notification is very important, and there is a tendency both to do more of them, which can be irritating, and to make them earlier and earlier, and thus farther and farther from the actual response time. Receiving a package with a notification of a census that will be done in a year is unlikely to spark any particular interest or enthusiasm. The agency should consider doing some testing of these notifications to determine the best timing for them.

In response to a question by Dr. Etzel, Mr. Marske said the Census Bureau does not know why some of the larger states have lower response rates than others, except that the response rates for economic questionnaires seem to mirror the rates for the 2000 Decennial Census. Dr. Etzel suggested this speaks to the issue of potential "targeting" of populations. The response rates will show that one state has a lower response rate than another, which will allow the agency to shift follow-up resources to address that problem, but it still does not reveal why one state has a better response rate than another. Research is needed to determine what is going on that motivates respondents in one state as opposed to another.

He added that the Census Bureau's effort to determine motives for response to the economic census reflects a stronger business- or market-orientation than the agency has previously shown in its efforts to improve response. The Census Bureau is engaged in a marketing effort to improve response to the economic census, and that is a very positive development. Now, the issue is one of refining the basic activity. Most of the information needed for this refinement will have to come from people who are talking to and interacting with potential respondents.

Mr. Marske said that much of what the Census Bureau wants to do involves developing ways to target segments of the economic census "population." The agency's subject divisions are working with various business associations and census stakeholders to develop the census questionnaires. The divisions have been asked to provide a list of those contacts who have really worked with them on the content of the report forms, so the Census Bureau can work more closely with those actively interested companies and associations. This also will help create a list of leaders within

industries that the agency should contact to ask for testimonials and other forms of support. He noted that the agency wants to proactively work with those business associations that have a particularly wide reach, or that have had a lot to do with the questionnaire content, and thus can speak to their members in support of the census.

With regard to working with other government mailings, Mr. Marske noted that the Census Bureau will have to be careful about how it does so. A public utility in Illinois recently mailed a postcard to their commercial subscribers and the Census Bureau got thousands of postcards from those people asking when they were supposed to receive their census questionnaires.

Mr. Marske wondered if, given that several members were absent from the meeting, the Census Bureau should arrange a conference call, or some other means of allowing input from absent members on these questions.

Dr. Etzel commented that the Census Bureau is using a “carrot and stick” strategy in encouraging response; the stick is pretty clear, while the carrot is less so. The subgroup has talked around two issues that may need to be probed in more detail—the benefit of the data and simplifying and easing compliance. The agency has a stick, but if it were practical to use that stick the Census Bureau should have a 100-percent response rate. The fact that it does not have that response demonstrates that the stick may not be a particularly effective means of encouraging response. That means the agency has to figure out what it can do to remove the obstructions, or disincentives, to response for companies.

Mr. Marske said the challenge to the Census Bureau is that many of the most obvious actions to ease response are effectively “off the table”—the agency has limited flexibility in changing the questionnaire design, and almost none at all in taking questions off the questionnaires.

Dr. Etzel suggested that the key then is to spend its available resources to make the help available more efficient and communicating that help to respondents.

In response to a question by Dr. Etzel, Mr. Marske said that while the compulsory response can be useful, there are limits to its effectiveness. Business people routinely say they receive government forms in the mail all the time, and the mandatory reporting requirement (or lack of it) is one way they prioritize them. Moreover, awareness that some Federal agencies prosecute for nonresponse makes the Census Bureau's reporting requirement compelling to some businesses. Dr. Etzel commented that the level of coercion exercised by a form asserting compulsory response probably is inversely proportional to the size of the company receiving the form. Senior officials of large companies shrug off threats of prosecution for failure to respond, because they are always being threatened with prosecution or lawsuits, while smaller businesses are far more likely to view such a threat as far more credible. The Census Bureau should place its emphasis on the benefits to be derived from responding to the census.

Mr. Zeisset (U.S. Census Bureau) asked if members had any personal contacts with officials of trade associations or companies from whom the Census Bureau could obtain testimonials. He commented that Mr. Marske was at the World Trade Center on September 11 at a conference and had collected some taped testimonials, but those tapes are now buried under the rubble. The Census Bureau can obtain testimonials from economists, but those are not likely to have the impact on potential respondents most needed.



Dr. Etzel suggested the Census Bureau tell the subgroup the industries or areas of the country for which it most needs testimonials, and then let the members consider the question for a few weeks to come up with the most likely candidates. The issue is how to use the resources in the best way possible.

#### Unit Level Models for Small Area Estimation: Applications to Census Adjustment of Small Areas and Small Area Estimation for the American Community Survey (ASA, PAA)

Dr. Malec (U.S. Census Bureau) said that the Census Bureau is looking for guidance from the Committee subgroups about the agency's models for small area estimation. He used a simplified version of the American Community Survey as an example of how these models would work.

He discussed a specific small-area estimation equation, noting that when a specific sample is drawn, some small areas might have no representation in the sample, which makes it difficult to determine accurate estimates for those areas. The agency can opt to do nothing to compensate for the situation and explain that it does not have precise design-based estimates. Or, it can impute for the entire small area and put in averages, while providing extensive explanatory caveats. By modeling the data, small-area methods can usually improve this latter approach.

The prevailing method for developing small-area estimates is to use hierarchical models. These cases need both a model for the entire population and a model for the sample. Both should have common parameters so that one can link up the sampled and unsampled people. Then, with a distinct model for each small area, one can further model the similarities between the models. There are several ways to do this using either Bayesian hierarchical models or random effects terminology. With this type of model there are typically two parts to the resulting small-area estimates—one that uses the data just from the small area, and the other, which uses data from all of the areas. Weights which combine these two parts together are estimated from the model.

A key question concerns the relative merits of unit-level models versus aggregate-level models. Unit-level models are more complicated than aggregate-level models, in part because the unit approach requires more extensive modeling. To use a unit-level model for individual outcomes, one must account for sample selection within the small area. For complex designs, the sample selection can depend on the outcome.

Aggregate-level models and unit-level models both have distinct specific problems. In general, both can have problems with sample selection at the higher level, as well.

There are no canned computer programs that one can "plug in" to get estimates; each problem is subject specific, so it takes some development, both for aggregate-level and unit-level models.

A recent evaluation of governmental use of small-area estimates established some general suggestions—

- ! There should be as many empirical evaluations as possible in the reports.
- ! Presentations of error should not just include model error, but should address underlying biases due to assumptions in the model.

! Any indirect estimates should include appropriate cautions and background and data analysis.

There are two fundamental questions that need to be addressed in light of these suggestions—

! What specific actions should be applied to aggregate- and unit-level models with respect to the above suggestions?

! Can the two types of modeling be used to check each other ?

The Census Bureau already has begun to apply small-area models which has raised some issues, such as small-area coverage.

Dr. Malec noted that the Accuracy and Coverage Evaluation (A.C.E.) Is a complex survey and trying to model would add to that complexity. He asked whether the A.C.E. should be modeled in order to evaluate census coverage. While models may not “hit the mark exactly,” they might be useful for robustness studies and other uses. Should the Census Bureau conduct long-term research using the 2000 A.C.E. and models to address the problem at hand?

Another project is the use of small-area methods for benchmarking the American Community Survey. There are demographic estimates for counties by age and sex that use a census residency rule. Using the data to benchmark the American Community Survey would be problematic as this survey uses a different residency rule. However, if the American Community Survey asked a few questions based on the census residency rule, perhaps one could use the American Community Survey to get various estimates. Again, one could use an aggregate- or unit-level approach. But is there a good place to start, and can unit-level models produce a statistical framework for demographers?

Dr. Ghosh (American Statistical Association [ASA]) complimented Dr. Malec for his work. There are many technical issues to be addressed—

! Unit-level data. These should be used whenever possible. In some cases a unit-level model can be formulated in terms of an aggregate-level model. However, these are typical situations only when area-specific covariates, rather than unit-specific covariates, are available. If one has access to unit-specific covariates, the sufficiency reduction is not possible, and area-level reduction of data leads to loss of information. Aggregate-level models are useful for secondary users of survey data. Since microdata typically are not available, researchers are forced to rely on aggregate-level data. Hence, unit-level models may be useful only for internal Census Bureau purposes. Census Bureau employees should take full advantage of their access for evaluation purposes. Sample selection bias exists, but some recent work addresses this issue. However, there is still no satisfactory solution to the problem. In addition, model diagnostics are a critical component of any inferential procedure.

! Models that borrow across small areas. How one approaches this will depend on how small areas are defined. In some cases, such as national-level data sets, otherwise large units, such as states, automatically become small areas. When counties are regarded as the small areas, one can borrow information across counties and post-strata. When the states are small areas, it may not always be necessary to borrow strength from other states, or at least not all of the other states. However, by simply combining everything, all small areas may be subject to an undesirable shrinking procedure. One must be very careful about what to combine and what

not to combine. Another possibility is clustering small areas, but it should be active clustering, rather than ad hoc or complete clustering.

- ! Robustness. This is welcome, but given the limited time, it is uncertain how extensive the Census Bureau's models will be, particularly as the agency will have to limit itself to certain models. While the agency regards demographic analysis as a "gold standard," perhaps this is not the best approach.
- ! Residency rules. The difference in these rules between the American Community Survey and the census makes analysis challenging. There is a need for small-area adjustment and benchmarks due to these differences. In this case, unit-level modeling of the American Community Survey would be a good idea. The covariates, however, are unit-specific. Working only with the aggregate-level statistic may entail loss of information for American Community Survey-related problems.
- ! Modeling variance. This is a formidable task, particularly with regard to very complex surveys. In many of these cases, the *chi*-squared assumption may be wrong.
- ! Binary count data. One does not necessarily have to make the "normality" assumption by transforming the data; if one insists on transformation, one cannot make the logic transformation for binary as it is only composed of "1s" and "0s". Logarithmic transformation leaves the "0s" out, so in such cases it is better to stick to a general linear model.

Dr. Malec agreed that unit-level modeling is good if it can be done and if it is available. Aggregate-level data may not be released in enough detail. There are few people who can work on these issues outside of the survey organizations, due to confidentiality constraints. In response to Dr. Ghosh's inquiry about cases in which both the population size and mean are unknown, Dr. Malec stated that one can extend a small-area model to include both the population size and a conditional model based on population size. He stated that the robustness issue is important. However, apart from robustness, there are some important long-term research issues associated with finding an appropriate model, evaluating the models, and extending them. Ultimately, robustness and adaptive modeling can be used as part of the model-building process. Unfortunately, the current research on the specific partition models that Dr. Ghosh suggested are not in a form that is readily applicable. The research on Dirichlet process models, however, is directly applicable in terms of having models that do not just borrow evenly. These offer an intermediate approach to the partition models.

Dr. Belin (ASA) said that the usual goal is to have models that have implications for predictions. One can then compare the model predictions against what the statistic would be. The problem in the small-area context is that there is not a statistic against which to compare the model; the data are not available at a low enough level. There was some work done by anthropologists at the Census Bureau during the 1990 Census that provided some diagnostic for how a certain model would compare against an independent reflection of reality. There probably is someone at the agency who is working on a local area that could illuminate the current small-area research. It would be worthwhile to embed within the American Community Survey a formal effort to research a few small areas. Otherwise, the agency will not be able to determine which model has more bias in that context.

Dr. Malec agreed that the Census Bureau needs to have the right answer available as this is the only way to validate estimates. In some cases, the agency might consider collecting more data in order to evaluate its assumptions, rather than to generate precise estimates for specific small areas. Dr. Belin agreed that additional field work in a specific area might help the agency evaluate specific features of its models.

Dr. Malec said that he had tried a predictive approach. As a model check, he has used his small-area model to predict the sample. One can make a direct estimate for each small area and then create a model to predict the entire sample and create a distribution for what the small area estimate would look like with the model. These typically have huge confidence intervals, but they are good for a model check if one's small area does not fit into the predictive interval.

#### Develop Recommendations and Special Interest Activities (AEA)

The subgroup's members reviewed recommendations prepared prior to the session.

Mr. Mesenbourg (U.S. Census Bureau) said that the North American Industry Classification Systems (NAICS) was being expanded for the 2002 Economic Census to provide more data on the Information Technology sector. These data will be available by establishment, industry, and geography.

In response to a question by Dr. Goolsbee, Mr. Mesenbourg said businesses, such as Internet auctions, would be represented by the industry classification. The wholesale and retail sectors will provide class-of-customer data.

Dr. Knickerbocker (U.S. Census Bureau) commented that a recommendation requesting that companies provide data on estimated cost savings may be confusing and the resulting data would be unreliable. The subgroup agreed that such a recommendation should not be made.

Dr. Roberts asked if data on transactions "across plants" within a firm versus "across firms" should be collected. Dr. Knickerbocker said that the Annual Survey of Manufactures does collect interplant transfer data.

Mr. Mesenbourg added that the Census Bureau has learned from its own studies that multiunit establishments were confused by data collection queries concerning "within-company" transactions. As a result, the agency has focused on transactions between separate companies.

Dr. Browne said that a recommendation regarding promotion of the 2002 Economic Census was aimed at encouraging large firms to cooperate by providing their data in a timely manner. Mr. Mesenbourg agreed that increased promotion would be beneficial. He added that he had recently approved the 2002 Economic Census cover letter, which includes a statement by Dr. Greenspan (U.S. Federal Reserve Bank) encouraging response. The Census Bureau expects businesses will pay more attention to the letter if Dr. Greenspan is connected with the operation.

In response to a question by Dr. Maynard, members agreed that the American Community Survey would provide valuable data for economic analysis. The subgroup agreed that it should continue to support the survey and offer guidance.

In response to a recommendation by Dr. Greenstein, Dr. Pakes said that asking a company to determine the value of its human capital may result in misleading data. He noted that while consulting for an airline, he met an employee whose knowledge was invaluable to the company—it could not function without him. However, the value of his skills to another company would be a fraction of his value to the airline. He suggested that this aspect of the recommendation be clarified and made into a separate recommendation.

In response to a question by Dr. Betancourt, Mr. Mesenbourg said that the Census Bureau was seeking ways to provide the Bureau of Economic Analysis (BEA) with more current data from the Service Annual Survey on data processing, software, etc. The BEA was concerned that its receipt of these data 10 months after the close of the reference month in 2000, led to a revision in the Gross Domestic Product (GDP). If quarterly data were available, the BEA could have avoided this revision. Dr. Betancourt said that focusing on a specific industry for more frequent data collection, like software or data processing, still may not provide accurate data. By the time data from one of these industries is available, the “hey day” of that industry may have past, and another industry’s data could have a greater impact on the GDP. Once a change to the collection frequency is made, it will not be easy to remove that industry from quarterly data collection. Mr. Mesenbourg agreed that removing the industry would be difficult, but adding more pertinent industries would be relatively easy.

Dr. Roberts noted that if more frequent collection of a series of data were to be advocated, the subgroup should footnote the request by adding that emphasis should be placed upon the importance of the series and the cyclical sensitivity of the industry for which data are being collected. Dr. Pakes suggested ongoing studies be performed to identify leading and lagging industries to determine which industry data would best be represented by the collection of quarterly data.

Dr. Knickerbocker noted that the BEA must rely heavily on assumptions when providing quarterly GDP estimates. As a result, the agency would be eager to have additional quarterly data from which it could produce its estimates.

Considering that this Professional Associations Advisory Committee (PAAC) meeting would be the last attended by Dr. Pakes, Dr. Knickerbocker offered the Census Bureau’s appreciation for Dr. Pakes service to the subgroup and the agency.

The subgroup nominated Dr. Maynard and Dr. Betancourt as cofacilitators in 2002.

Ms. Maynard agreed to act as the subgroup’s liaison to the Federal Economic Statistics Advisory Committee (FESAC). Dr. Knickerbocker noted that FESAC is an advisory committee chartered by the Census Bureau, Bureau of Labor Statistics, and the BEA. Dr. Betancourt will serve as liaison to the BEA’s advisory committee.

(See Appendix A for the subgroup’s official recommendations and the Census Bureau’s responses.)

## Develop Recommendations and Special Interest Activities (AMA)

Dr. Etzel directed the American Marketing Association subgroup to discuss its proposed recommendations.

(See Appendix A for the subgroup's official recommendations and the Census Bureau's responses.)

#### Develop Recommendations and Special Interest Activities (ASA)

Mr. Garrett (American Statistical Association [ASA]) asked the subgroup to review the recommendations members had discussed the day before. Virtually all were adopted following relatively minor changes in wording and/or emphasis.

Dr. Lohr suggested a recommendation urging the Census Bureau to conduct a post-enumeration survey in connection with the 2010 census to evaluate census results and to be available for an adjustment should that prove feasible. Following a short discussion, the subgroup accepted this recommendation.

Dr. Clark (U.S. Census Bureau) pointed out that Dr. O'Hare's recommendation concerning the standardization of the agency's use of language and measures of precision in publications did not relate to one presentation but to most Census Bureau publications and data releases. The subgroup agreed to make this a general recommendation not linked to any of the specific presentations at this advisory committee meeting.

(See Appendix A for the subgroup's official recommendations and the Census Bureau's responses.)

#### Develop Recommendations and Special Interest Activities (PAA)

At the request of Drs. Denton and Barrett, Dr. Long (U.S. Census Bureau) agreed to ask a member of the American Community Survey's geographic staff to make a presentation to the subgroup at the April meeting on the residency requirements for the survey. The members of the subgroup reviewed drafts of proposed recommendations prior to presenting them to the full Committee.

Dr. Denton commented that the early session enabling the subgroup to have preliminary discussions of recommendations, and to assign members to draft recommendations for the subgroup had worked out very well. Dr. Long agreed, adding that he would bring this up at the planning discussions for future Committee meetings.

(See Appendix A for the subgroup's recommendations and the Census Bureau's responses.)

#### Closing Session: Continue Committee and Staff Discussion Plans and Suggested Agenda Topics of the Next Meeting and Public Comment

Dr. Denton (Population Association of America [PAA]) asked for a summary of each subgroup's recommendations.

Dr. Betancourt presented recommendations from the American Economic Association—

! The subgroup is pleased with the Census Bureau's progress on the 2002 Economic Census. In future economic censuses, the agency should gather data on two features of the economy that recently have become important—the use of temporary staff and the use of leased employees. The agency also should collect data from respondents on when they began using on these two particular sources of staffing.

- ! The American Community Survey promises to have great utility for economic and demographic analysis and the agency should be commended for its dissemination strategy. The subgroup would like to see the survey used as a screening platform for other data-collection efforts. The agency could use its sample frame to create other, more specialized surveys. The Census Bureau needs to review the American Community Survey's content to ensure maximum utility of the survey, and to conduct more research into representation for particular groups, e.g. non-English speakers.
- ! For e-business infrastructure, the Census Bureau should be broad and flexible in determining and using definitions as this is a very dynamic field. The progress made so far is very good and it is particularly gratifying to see the agency begin collecting data on more than just manufacturing.
- ! Regarding the service sector, the Census Bureau needs to consider which initiatives to undertake first. Economic importance should influence the order in which these initiatives are begun. Data need to be collected more frequently from the service sector, particularly for certain items.
- ! The Census Bureau has developed an important project to establish a longitudinal database to cover the years 1975 through 1998. These data will have the ability to be linked by firms and establishments. This is an exciting initiative as it covers the whole economy. The agency's progress on this initiative is to be commended.

Dr. Garrett presented recommendations from the American Statistical Association—

- ! The Census Bureau should use Count Question Resolution to determine whether systematic problems are present; this will inform the way in which the 2010 Census should be conducted and improved. The agency should consider making available to users census geographic areas that were affected by changes made through this program.
- ! In planning the 2010 Census, the Census Bureau needs a summary document on sources of duplication, Census 2000 unduplication operations, and evidence of duplication in Census 2000 evaluations; this will provide a "global" perspective on duplicate enumerations. The agency also should continue its research into administrative records, particularly as it will help determine the feasibility of an enumeration of Americans overseas.
- ! The subgroup supports the Census Bureau's efforts to plan and test early for the 2010 Census, particularly for 2003 through 2008. Doing so should contain costs and improve data quality. The subgroup supports the agency's push to incorporate modern information technologies. However, the success and feasibility of these efforts will depend on whether the agency can obtain funding early in the census planning cycle.
- ! The Census Bureau should continue its strong research program, particularly its experiments to decrease nonresponse, explore new technologies, and increase data quality. The agency also should expand its experimental design program and its use of designs, such as fraction factorial designs. The agency is cautioned to avoid using individual response incentives in settings where participation is mandatory.

- ! For interviewer refusal aversion training, the Census Bureau needs to pursue research on the personal characteristics of effective interviewers for potential use in screening applicants for interviewer positions. Imparting knowledge about survey goals to interviewers should be a priority of training efforts. The agency should consider having repeated educational encounters with interviewers that review survey goals. In addition to studying the first-contact cooperation rate, the agency should study and analyze other responses. These data could be analyzed with an eye toward examining sources of variability, the response variables, and the types of refusals that were averted.
- ! The agency's unit-level models for small area estimation program are good, but it faces several challenges, particularly model diagnostics. The Census Bureau should use unit-based models as widely as possible in order to evaluate aggregate-level models for census adjustment, American Community Survey projects, and elsewhere. Combining small areas is tricky, so the agency should consider an adaptive approach. Also, the Census Bureau should consider special data collection efforts in a sample of small areas in the American Community Survey in order to provide feedback for future small-area estimation research.
- ! In general, the agency needs to move toward adopting standard language and presentation of information on measures of precision across its publications.
- ! While the Accuracy and Coverage Evaluation may not have been used to adjust the results of Census 2000, a similar post-enumeration survey needs to be conducted following the 2010 Census.

Dr. Denton presented recommendations from the Population Association of America—

- ! The Census Bureau is to be commended for its efforts to explore new methods for increasing response rates to household surveys. Refusal aversion training shows particular promise. However, before this training is fully implemented, the agency needs to determine whether such training is consistently beneficial across interviewers, survey modes, and topics. The agency also needs to determine how long the impact of this training lasts and which aspects of interviewer behavior are affected.
- ! The Census 2000 experiment to examine the changes on the race question since the 1990 Census should be used as a model for other studies that are designed to ensure data continuity and comparability. The agency needs to do more research on how individuals interpret these items and whether it would be easier for respondents to answer a single, combined race/ethnicity question.
- ! The Census Bureau should preserve original and intermediate data files for further research. Original data that have not been subject to imputation, hot-decking, and other methodologies would be valuable for research on a wide array of topics. Since the long-term storage costs for these data are low, it would be a shame to lose these intermediate files and the potential research that could be conducted with them.
- ! Residency rules need to be reexamined and need further research in order to achieve comparability of American Community Survey and census data. Detailed information on this topic should be on the agenda of a future meeting.



- ! In general, the Census Bureau's full count review efforts are commendable. The agency should consider identifying large group quarters by name, as this would facilitate the efforts of state and local efforts to uncover group quarters errors.
- ! The Census Bureau should provide more information to the Committee about the decision not to adjust Census 2000.

Dr. Etzel presented recommendations from the American Marketing Association—

- ! For the economic census, the Census Bureau should capture data by specific products and services (in as much detail as possible) as well as by industry. Regarding alternative reporting units, the Census Bureau should continue its efforts to investigate gathering data at the establishment level. The agency is to be commended for its efforts to collect data on supply chain measures and outsourcing information. However, there are several marketing activities that are commonly outsourced, yet were not included (e.g. advertisement, sales, promotions, etc.). The subgroup supports limiting core statistics to "Internal Revenue Service (IRS) 941" paid employees with national totals for leased employees. Leased employee providers should be tracked and reported as a separate industry classification.
- ! The Census Bureau should consult with others regarding its experiment on using incentives to increase response rates. The agency ought to contact two industry sources—those that employ voluntary response techniques and those that rely on incentives to generate responses. The agency should contact corporations that use these techniques, and might consider holding a symposia on the subject. There appear to be several dangers in relying on incentives, so the agency should emphasize techniques, such as multiple notification, that do not rely on incentives. On the race/Hispanic origin item experiment, the agency needs to investigate data quality as well as the response rate.
- ! Regarding its plans for interviewer refusal aversion training, the Census Bureau should expand the program to include face-to-face interviews. Managers and supervisors need to "buy in" to the new training to make it effective. The agency ought to revise the process for updating the refusal aversion handbook for interviewers. The agency should take advantage of the work that the corporate world has done on this subject, and examine the literature on sales force training.
- ! The program to increase business response to the 2002 Economic Census is good. Some suggested refinements to the program include—testing secondary messaging; testing alternative cover letter forms and split-run mailings; and finer targeting of audiences and potential respondent groups. In its effort to encourage business participation in economic censuses and surveys, the agency should recruit prominent local, as well as national, industry figures to provide spokesperson testimonials.
- ! The subgroup was pleased to receive a progress summary on previous recommendations from the agency and would like to continue to see similar updates in the future. This is a good way to see how advice from the Committee is being translated into action.

Mr. Thompson (U.S. Census Bureau) called for public comment. Hearing none, he adjourned the meeting.

I hereby certify that the above minutes are an accurate record of the proceedings of the meeting held on October 18-19, 2001, by the Census Advisory Committee of Professional Associations.

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Stanley Smith, Chairperson

## Appendix A.

### Recommendations of the Census Advisory Committee of Professional Associations Made As a Result of the Meeting on October 18-19, 2001

#### Recommendation 1

##### Executive Steering Committee for Accuracy and Coverage Evaluation Policy Update

"The Committee members from the Population Association of America (PAA) are very interested in the Census Bureau's decision announced on October 17, 2001, not to adjust counts from Census 2000. At a future meeting we would like more information on how the decision was reached and how the differing results of demographic analysis and the Accuracy and Coverage Evaluation survey were reconciled. We also are interested in the Census Bureau's reaction to reports of the National Academy of Sciences on the role of demographic analysis, including its recent report ([www.nap.edu/books/0309076498/html](http://www.nap.edu/books/0309076498/html))."

##### Census Bureau Response

The Census Bureau would like to express appreciation for the recommendation. We will give a presentation at the next advisory committee meeting on how the demographic analysis and Accuracy and Coverage Evaluation (A.C.E.) results were compared and factored into the October decision, including discussion of the National Academy of Sciences panel's comments on the role of demographic analysis.

#### Recommendation 2

##### 2002 Economic Censuses

"The Committee members from the American Economic Association (AEA) recognize the progress made on key 2002 Economic Census issues discussed in prior advisory committee meetings.

1. We recommend that for the 2007 Census the Census Bureau consider gathering information on temporary staff and asking questions on when new business practices, for example, use of leased employees, began. We also recommend displaying additional information in the core statistics reports.
2. If not in the 2002 Census then in future Censuses, consider providing data on business-to-consumer, business-to-business, and business to government transactions.
3. We commend the Census Bureau for its work on supply chain issues and encourage the Bureau to extend this work.
4. We recommend enhanced promotion of the 2002 Economic Census to generate public interest and company compliance.

The Committee members from the American Marketing Association (AMA) continue to support enhancements in the Economic Census that reflect new ways America is doing business such as e-commerce and outsourcing. We recommend continued development of efforts to capture

information for specific products and services at as fine a level as possible. Marketers need data in as granular a form as possible. The Alternative Reporting Units (ARU) discussion states that for many industries revenue data are not available at the establishment level, leading the Census Bureau to rely on information at the firm level. This is certainly true for some networked industries (banking, insurance, and communications were cited as examples). However, since the firms in these industries make investment decisions in establishments and reward the managers operating these establishments, they must have in place some basis for evaluating contribution at the establishment level. Therefore, we recommend that an effort be made to identify metrics other than revenue and payroll to measure and report the contribution at the establishment level in these networked industries.

There are several frequently outsourced marketing-related activities that are not included among the categories listed in the paper. Among these are advertising, sales promotion, sales, post-sales service, database management, and billing. We recommend that the definition of 'supply chain' be examined to see if these and similar marketing activities should be included as distinct activities.

We support the proposal to limit core statistics to IRS 941 paid employees with national totals for leased employees. We further recommend that the leased employee providers be tracked and reported as a separate industry classification."

#### Census Bureau Response

The Census Bureau appreciates the support and recommendations from the AEA members and from the AMA members.

While the content for the 2002 Economic Census is set, we will give serious consideration to the recommendations regarding the collection of new information in future censuses on temporary workers, adoption of new business practices, more detailed information on transactions by class of customer, and greater detail on supply chain activities.

We agree that aggressive promotion of the 2002 Economic Census is an important priority. We have developed a multifaceted program that will target businesses likely to receive 2002 Economic Census report forms, including both individual businesses as well as accountants. After data collection is completed, promotion initiatives will target census data users. For additional details about our census promotion program, please refer to the October 2001 paper, "Promoting Business Response to the 2002 Economic Census," that was presented to the AMA members.

We believe that the new North American Product Classification System (NAPCS) will provide much needed information on specific products and services. The first phase of NAPCS will be implemented as part of the 2002 Economic Census. Additional product information will be added to our Services Annual Survey if funds become available.

We understand the concerns regarding the use of the ARU, but our experiences in the 1997 Economic Census, in current surveys, and through a number of cognitive interviews have convinced us that companies in these industries cannot report financial information by business location. In the 2002 Economic Census, we plan to collect financial data by the North American Industry Classification System within the company, but collect employment and payroll data for each business location. We agree that employment and/or payroll may not be an appropriate metric for redistributing revenue to individual business locations and initially did not plan to

provide any subnational financial data for ARU industries. However, a number of data users have requested that the Census Bureau generate auxiliary subnational data sets for these networked industries, and employment and payroll are the only variables that will be available for each location.

We appreciate the suggestions regarding broadening our definition of supply chain activities and will incorporate this advice in future planning activities.

We concur with the AMA members' recommendation to limit our core statistics report to paid employees; that is, those reported on Form 941. Once we have experience collecting and reviewing the leased-employee data, we will determine how best to present these data.

### Recommendation 3

#### Census 2000 Update

"The Committee members from the American Statistical Association (ASA) encourage the Census Bureau to utilize the Count Question Resolution Program not only to resolve Census 2000 data challenges, but also to collect and analyze information to determine if any systemic problems are present in order to inform and improve Census 2010 operations.

We urge the Census Bureau to consider making available to users census geographic areas affected by changes made through the Count Question Resolution Program.

The PAA members commend the Census Bureau for its efforts in full-count review and count resolution. We recommend that large group quarters facilities be identified by name in order to assist future state and local efforts to uncover errors in group quarters populations."

#### Census Bureau Response

Beginning November 2000, the Census Bureau started implementing the Demographic Full Count Review program (DFCR). This program was a quality check of Census 2000 data. The DFCR established an integrated early data review and clearance process for the 100-percent data items in Census 2000. The program was implemented not only to assure the accuracy of governmental unit block data, but also to make certain there were no systemic problems inherent in the data processing systems and programs. The major objectives of the program were to identify, address, and/or explain issues and problems associated with coverage, content, processing, and geocoding. The DFCR participants included members of the Federal-State Cooperative Program for Population Estimates as well as Census Bureau staff. Any problem that could not be corrected or was determined to require additional research and analysis was forwarded to the Count Question Resolution (CQR) staff.

A significant component of the CQR program includes Census Bureau internally initiated research and review of census files. Should any information about systemic problems be identified as a part of this research, the Census Bureau will incorporate that knowledge into improving 2010 operations. All corrections made to the data as a result of the CQR program will be included in the *American FactFinder* errata that are posted on the Internet. All census data users will have access to these errata so that they may use the corrected counts for their programs and research.

We thank you for your commendation of our efforts in the DFCR and CQR programs. It is not possible for us to identify by name even large group-quarters facilities as that would be a violation of Title 13 of the United States Code, which protects the confidentiality of such information.

#### Recommendation 4

##### American Community Survey (ACS) and Economic Analysis

"The AEA members commend the Census Bureau for the design of and the dissemination strategy for the ACS. The ACS data potentially will be of great utility for economic and demographic analysis. We encourage the Census Bureau to consider strategic use of this survey as a screening platform for more specialized data collection efforts (for example, to support the efficient conduct of targeted, special purpose surveys on important issues such as health, welfare, or labor market concerns). We also encourage a periodic review of the survey content to ensure the survey has maximum utility.

We are concerned about possible under-representation of some population subgroups, such as those in poverty-impacted areas or non English speakers. The Census Bureau should continue its research on such issues and make data users aware of their findings."

##### Census Bureau Response

We thank the Committee for its support and words of encouragement. We agree with the Committee that the ACS has many potential benefits. For example, we are working with staff of the Office of Management and Budget to develop guidelines that will be used to determine when follow-on surveys are appropriate.

The ACS seeks to assure high quality data for all subgroups of the population, and we share the Committee's concern about coverage for some population subgroups. Poverty and the ability to speak English are correlated with response rate, and as part of continuously improving the ACS design, we are now conducting research to develop alternative designs that will target low mail response areas for oversampling for nonresponse followup. Results of this work will be available for discussion and decision making no later than 2002.

#### Recommendation 5

##### 2010 Census Planning—Next Steps

"The Committee members of the ASA—

1. Recommend that the Census Bureau develop a summary document on sources of duplication, Census 2000 unduplication operations, and evidence of duplication in Census 2000 evaluations to provide a global perspective on duplicate enumerations.
2. We encourage the Census Bureau to support research on administrative records, including, but not limited to, methodology for matching and linking to census geography, which among other benefits could pave the way to a workable plan for overseas enumeration.

3. We strongly support the Census Bureau's efforts to allocate more funds for research, experimentation, and testing in the years 2003 to 2008 with the intended effect of improving data quality and reducing costs. The potential increased efficiency and cost-effectiveness of the 2010 Census by adopting modern information technology is an excellent idea. But its feasibility depends much on obtaining the necessary additional federal funding especially at the early planning stage.
4. We believe that, although the A.C.E. was not used for adjustment of Census 2000, it is important that a similar post-enumeration survey be carried out in 2010 for the purpose of evaluating the census results and possible adjustments in 2010.

The Committee members from the PAA—

5. Recommend that the Census Bureau preserve original and intermediate files for further research. Original data (for example, prior to content editing, imputation, hot decking, data swapping) would be valuable for research on a wide variety of topics, including analysis of change in race/ethnicity questions and the relationship between imputation and the undercount.
6. We believe that the issue of residence rules and comparability between data in the American Community Survey and the decennial censuses is vital and needs more research. We request that these matters be on the agenda for a future meeting."

#### Census Bureau Response

1. We agree with the recommendation. As a part of the Census Bureau's evaluation of Census 2000, we plan to document sources of duplication, Census 2000 unduplication operations, and evidence of duplication in Census 2000 evaluations. We plan to share this information with you as soon as it is available.
2. The Census Bureau is continuing to support a research program regarding administrative records and their potential applications for censuses, surveys, and estimates. Research on geographic applications includes matching administrative records addresses to the Master Address File, the Census Bureau's primary address list. There are three main goals of this research—

- ! To determine how administrative records can be used to evaluate the quality of the Master Address File.
- ! To determine how administrative records can validate address updates from other sources, such as the Postal Service's Delivery Sequence File.
- ! To determine how data from administrative records can target updating operations or directly provide updates to the Master Address File.

Other research involves integration of several administrative records files into a comprehensive database of unique administrative records, people, and addresses. For person records that appear multiple times and possibly at multiple addresses across the administrative record source files, a methodology has been developed and will continue to be evaluated and



enhanced to accurately unduplicate those person and address records. The resulting database can serve as a rich source of independent data with potentially wide application in census or survey design, estimation, or quality assurance. The source files include federal tax payers and their dependents, medicare enrollees and public housing assistance recipients, and several other groups. Some of these source files contain records for individuals living overseas. An attempt is made to geocode the administrative records addresses to census blocks to widen the potential application of the database. Research continues on source files to improve population coverage and methods to increase the quality of the characteristics data and the geocoding rates of the administrative records database.

3. We thank you for your support in our efforts to obtain additional federal funding earlier in the decennial cycle. On many occasions, we have expressed to the Department of Commerce (DOC), the oversight agencies, our advisory committees, and Congress that our early planning efforts for the 2010 census are not predicated upon 1990 or Census 2000 efforts, but rather on a major reengineering of Census 2000, exploring opportunities for innovations and taking advantage of new technologies that will allow us to contain costs and improve accuracy. Although Census 2000 was the best census ever, we experienced serious early- to mid-decade planning deficiencies and design changes, largely due to the lack of early decade funding for operational planning, research, and program design. Without timely, adequate funding to initiate and sustain a systematic research and development design infrastructure, the 2010 census will face costs and risks far greater than those encountered in Census 2000 and will be potentially far less successful in overcoming them. For reasons such as these, a significantly improved approach to early planning and design must be adopted, supported, and funded. We will continue to work with the DOC, OMB, and the Congress to fund the decennial census early in the decade to support our efforts for a successful 2010 census.
4. The Census Bureau has evaluated census results since 1940 and will continue to do so in future censuses. For 2010, we are planning to conduct a coverage measurement program. We will determine the design of the survey as part of the 2010 planning efforts.
5. The amount and complexity of the Census 2000 data make retention in its entirety an impractical undertaking. That is, we have neither the storage space nor necessary detailed documentation to retain all production files and/or their multiple iterations. In fact, we have already had to delete some intermediary and/or outdated versions of some 100-percent files in order to accomplish Census 2000 sample processing. We recognize the need to evaluate the effects of imputation and we believe that we are preserving information that will serve this goal.
6. We appreciate your recommendation. The issue of residence rules and the comparability of ACS data and census data are major concerns for us as we begin planning for 2010. We are already in the process of establishing a content research and development team that will be looking at the residence rules and content comparability between the census and ACS. We will continue to work with the advisory committee members to inform them about our progress and obtain their input regarding our efforts. Additionally, we will forward your recommendation to the appropriate staff and request that these matters are placed on the agenda for future meetings.

## Recommendation 6

## E-Business Infrastructure

"The AEA members commend the Census Bureau for this initiative. On the issues raised in the paper—

1. We suggest that the Census Bureau use broad and flexible criteria to define infrastructure.
2. We commend the Census Bureau for moving beyond manufacturing.
3. We suggest that whenever possible, the Census Bureau gather data on information technology relying on the user side rather than on the production side, for example expenditures instead of shipments.
4. We encourage the Census Bureau to promote an interagency (BLS, BEA, etc.) task force to enhance the ability to investigate data collection on the valuation of own software, pricing, depreciation and replacement rates, and skill mix."

## Census Bureau Response

The Census Bureau appreciates the Committee's thoughtful discussion on e-business infrastructure, the additional references provided after the discussion, and the recommendations.

The Census Bureau expects to adopt the Committee's recommendations. We agree it will be best to use broad and flexible criteria to define infrastructure by focusing on information technology in general. If funding prospects are positive, we will move ahead with promotion of an interagency task force to address these issues. We recognize that discussions with other agencies may lead to modification of these intentions but find them reasonable as a starting point. We also recognize the benefit of focusing on the user side, rather than the production side, for the information technology area.

We have questions regarding the collection of information on pricing, depreciation and replacement rates, and skill mix. However, we will raise these ideas with the interagency task force for its consideration.

## Recommendation 7

### Services Sector Data: What We Have and What We Need

"The AEA members encourage the Census Bureau to consider expanded coverage of the service sector as a fundamental objective. As for issues raised in the paper—

1. We encourage the Census Bureau to study the economic significance and cyclicity of sectors in selecting service items for inclusion as part of a Quarterly Indicator Survey.
2. As for additional data to collect in a Quarterly Indicator Survey, at this moment and given what we know, revenues and contracts are probably more than enough. But one should be aware of the use of accounting schemes to improve earnings outlook.
3. We support the Census Bureau's efforts in expanding the service products data collection.

4. There should be no collection of inventory data for services except for special cases that should be documented.
5. We recommend that the Census Bureau weigh heavily the economic significance of the industry in selecting which ones to include for expansion."

### Census Bureau Response

We appreciate the AEA members' support for expanding the periodicity, content, and scope of the Bureau's current service sector statistics program. Although we have dramatically improved our data collection for the service industries in the last 5 years, substantial improvements are necessary to ensure the continued relevance of our economic statistics.

We will work with the Bureau of Economic Analysis (BEA) and the Federal Reserve Board (FRB) to identify and prioritize those industries with the most significant economic impact for inclusion in our planned Quarterly Indicator Program. The cyclical volatility differs among industries within the service sector. Some areas (e.g., travel and recreation) are probably much more sensitive cyclically than other areas (e.g., health care). Our initial focus, based on the recommendations of the BEA and FRB, will be in covering computer services and high-tech industries in the Information Sector. We will carefully evaluate content alternatives to ensure the development of a consistent, easily understood, and useful set of indicators for informing the public and contributing to policy debate.

Along with our North American Free Trade Agreement partners, we are strongly committed to identifying, defining, and measuring products of service industries. We welcome the AEA members' continued support of this initiative. We agree that we will not collect inventory data beyond the limited data already collected for the publishing, motion picture, and sound recording industries.

Throughout our expansion of our current service sector statistics program, our first priority was industry expansion rather than increasing the content and periodicity of collection. Important areas remain uncovered, however, including most of finance, insurance, and the majority of transportation. We will continue our efforts at attaining industry coverage comparable to that in the economic census, with priority given to the most economically significant of these industries.

### Recommendation 8

#### Census 2000 Experiments—Results

"The AMA members recommend the following—

1. Assessing the Impact of Differential Incentives and Alternative Data Collection Modes on Census Response.

The broad topic of 'response rates to mailed questionnaires' has been extensively studied for more than 50 years in disciplines ranging from statistics to sociology to marketing. There are many organizations (e.g., J.D. Power and Associates, A.C. Nielsen) that rely extensively on mail surveys in data collection and that have considerable expertise that might be brought to bear on the subject. Similarly, there are commercial organizations that have information on the use

of incentives in stimulating responses to surveys (e.g., Simmons Study of Media and Markets or similar reports from MediaMark Research, Inc.). We recommend contacting these organizations for advice or possibly even organizing a symposium with representatives of organizations, such as these that are involved in the day-to-activities of increasing mail survey response rates.

We cannot unilaterally recommend a second mailing in 2010. However, virtually all of the empirical research that we are aware of indicates that a follow-up communication, a communication subsequent to the mailing of a questionnaire, increases the survey response rate. Much research also supports the notion that pre-questionnaire communications can increase response rates. Therefore, the question is not whether contacts should be made but whether the incremental increase in response rate merits the cost of the communication.

## 2. The Effects of Questionnaire and Content Changes on Response to Race and Hispanic Items: Results of a Replication of the 1990 Census Short Form in Census 2000.

The fundamental problem seems to stem from the overlapping response categories used in the Race and Hispanic origin questions. With nonmutually exclusive categories that include skin color, heredity, and geographic origin, the question structure violates a basic tenet of questionnaire design. It is not surprising that respondents are confused. Therefore, we recommend that in addition to studying response rates, the Census Bureau investigate the accuracy of the information generated. The objective of the research would be to ascertain if the data generated in the mail survey accurately portray the intent of the respondents as they answered the questions.

The ASA members commend the Census Bureau for its strong program in designed experiments to decrease nonresponse, explore new technology, and increase data quality, and we encourage the increased use of such experiments in early planning for the 2010 census. As with experiments for quality improvement in industry, they are likely to more than repay their costs. We encourage the Census Bureau to further develop its experimental design program, and expand use of designs such as fractional factorial designs.

We caution the Census Bureau about using individual response incentives in settings where participation is mandatory.

The PAA members congratulate the Census Bureau for the experiment conducted during Census 2000 to examine the effects of changes and the race and Hispanic questions between 1990 and 2000. This high-quality experiment conducted during Census 2000 is a model for the kinds of studies that should be done to ensure data continuity and comparability. Experimental and other research should continue on how respondents interpret the race and Hispanic ethnicity items and whether respondents would find one combined question on race and ethnicity easier or clearer than two separate questions."

## Census Bureau Response

We appreciate your support for our experimental research on race and Hispanic origin measures. We plan to continue and expand this research to consider issues such as question wording, combining race and Hispanic origin items, dropping the "Some other race" category, using examples, and so on. We will continue to explore the quality and meaning of the race data,

including the problems of overlapping categories mentioned by the members from the American Marketing Association. This problem originates in part from the ambiguity of the race and origin concepts themselves, and hence is difficult to fully solve through questionnaire design. A Content Reinterview Study to evaluate the accuracy of census data, including race and origin, was conducted for Census 2000, and qualitative research has evaluated how meaningful the response categories are to respondents. We will continue to assess how accurately our questions capture respondents' self-identified race and origin.

Thank you also for the suggestions regarding the Response Mode and Incentive Experiment. We appreciate the suggestions regarding companies that have experience with methods to increase response, for we are always looking for ways to improve response rates. In addition to extensive literature reviews, we will consider convening a group of experts from both the private and public sector to seek alternate methods for improving response.

Additional research needs to be conducted on the possibility of using a second mailing. The Census Bureau is considering an experiment for the 2004 test to help determine the most effective mailing/contact strategy (including the possibility of a targeted follow-up mailing) for maximizing response. A full cost-benefit analysis will certainly be conducted as a part of any test of a second mailing.

We appreciate the concern over using incentives in mandatory surveys. Before we would implement any methodology using an incentive, public reaction and policy considerations will be fully investigated.

## Recommendation 9

### Chief Economist Update

"We commend the Center for Economic Studies for its development of the Longitudinal Business Database."

### Census Bureau Response

The Center for Economic Studies appreciates the Advisory Committee's interest in the Longitudinal Business Database. We will keep the Advisory Committee abreast of further developments.

## Recommendation 10

### Interviewer Refusal Aversion Training

"The Committee members from the AMA—

1. Commend the Census Bureau for conducting this training research as a way to reduce respondent refusals. We strongly encourage its adoption in ongoing training as well as the expansion of similar training for those who do face-to-face interviews.
2. Recommend that careful consideration be given to communicating the importance of this training to obtain manager/supervisor buy-in so they can reinforce the skills learned by interviewers.

3. Recommend consideration also be given to a process for updating and sharing the Refusal Aversion Handbook. Ideally, this document should evolve as interviewers continually build on what works and what doesn't in dealing with respondent aversion. These ideas should be available to be shared among all current interviewers—especially those needing remedial support—and new trainees.
4. Recommend that the staff take advantage of the extensive sales force training experience in industry at companies ranging from business-to-business marketers such as IBM to consumer telemarketers. There also is an extensive literature on sales force training that deals with issues including identifying and responding to objections (of prospects) during sales calls that could substantially enhance your comprehension of the topic that can be accessed through the AMA's Web site.

The Committee members of the ASA—

5. Encourage the Census Bureau to pursue research on the personal characteristics of effective interviewers for potential use in screening applicants for interviewer positions.
6. Believe imparting knowledge about survey goals to interviewers should be a priority of training efforts. Consideration should be given to having repeated educational encounters with interviewers that review survey goals, which might benefit morale as well as job performance.
7. Believe this ongoing study concerns valuable research for reducing nonresponse. Clearly the primary response is the one studied, the first contact cooperation rate. We support the decision to analyze other responses such as speed. Perhaps these data could also be analyzed with a view of examining sources of variability in the response variables and the types of refusals that were averted.

The Committee members of the PAA—

8. Commend the Census Bureau for exploring new methods to increase response rates to household surveys. Refusal Aversion Training, which provides interviewers with skills for addressing the concerns of hesitant respondents, shows particular promise. Before refusal training is fully implemented, however, further efforts should be made to determine whether such training is consistently beneficial (across interviewers, survey modes, and topics), how long its impact lasts, and which aspects of interviewer behavior are affected by it. The experiment built into the National Health Interview Survey represents a step in the right direction."

Census Bureau Response

1. We are currently working with several divisions within the Census Bureau (e.g., Field Division, Demographic Surveys Division, and Technologies Management Office) to strengthen the Refusal Aversion Training. This interdivisional collaboration is helping us to refine the training materials and the curriculum in order to make them more widely available across the Census Bureau's ongoing and emerging survey programs, and in both field and telephone data collections.

2. We are working closely with the managers in the survey program areas in which we are testing the Refusal Aversion Training. We also will be making formal recommendations to the Blue Ribbon Task Force that is coordinating the redesign of the Census Bureau's interviewer training curriculum.
  3. As part of the planned revisions of the Refusal Aversion Training materials, the Field Representative Handbook will include the following: (1) a background section describing the process of encouraging respondent cooperation and (2) a survey-specific section describing the major themes of reluctance along with examples of verbatim respondent concerns and effective interviewer answers and response strategies. The background section would draw from the theory of respondent-interviewer interaction motivating this research. We envision that the survey-specific section would be updated and tailored to reflect concerns unique to a study population, survey topic, or the specific needs of a survey's interviewing staff.
  4. We will review materials available through the AMA Web site in order to take advantage of any literature that may be applicable to the Refusal Aversion Training.
  5. We are beginning research to develop a protocol to evaluate refusal aversion skills of current interviewing staff, not particularly new hires. While developing an evaluation protocol is a little beyond the main research goal of the Refusal Aversion Training project, further research should help us identify an evaluation that serves as a valuable management tool. Such a tool would be useful not only to evaluate interviewers immediately after training, but also to measure skills to impart to new hires and to identify when experienced interviewers need refresher training.
  6. As mentioned in the response to the question above, one of our future research goals is to determine not only the best time to administer the initial Refusal Aversion Training, but also to establish the frequency of refresher training that would bring the optimal level of interviewer performance.
1. These are good suggestions to apply to the next phases of experimental testing of the Refusal Aversion Training. Whereas there are limitations on the level of accuracy with which some data can be collected, we will attempt to include such measures in future research.
  2. As this recommendation suggests, steps to determine the extent and duration of the benefits of the Refusal Aversion Training (across interviewers, modes, and topics) are under way with the current research with National Health Interview Survey (NHIS) interviewers. Future research is planned to determine the best methods with which to implement the Refusal Aversion Training according to these factors.

## Recommendation 11

### Promoting Business Response to the 2002 Economic Census

"The Committee members from the AMA continue to be impressed with the market-oriented approach to securing responses to the Economic Census. Our recommendations are intended to encourage further refinements in the programs.

It is apparent that managers in many firms encounter impediments in completing the economic census forms. We think the staff should use the proposed focus groups as well as additional

research to identify and categorize these perceived obstacles. With specific obstacles articulated, the staff will be able to formulate focused aids and remedies that will improve response rates.

In its efforts to identify methods of improving response rates, we recommend that the staff—

1. Test various secondary messages (beyond the primary message of legal obligation) that are more benefit oriented.
2. Test alternative cover letters in split run mailings.
3. Profile target companies to determine which are less likely to respond as requested, and then use the profiling to allocate account manager time and effort.

We recommend that the staff solicit testimonials from trade association officials and leading figures in specific industries who may not be nationally prominent but who are respected and recognized in their respective arenas. These testimonials can be used in more targeted promotional efforts."

#### Census Bureau Response

We appreciate the members' comments and concur with their recommendations. We are taking steps to implement the recommendations. Over the coming months, we will conduct focus group and usability tests to identify response issues that we can address in communication materials. In developing communication materials, we will address a range of issues including benefits, burden reduction efforts including electronic reporting and the Internet help desk, and the importance of timely reporting. We also will consider tests of alternate cover letters, subject to budget constraints. Company profiles are an important element of the census Account Manager program, and we are compiling an extensive array of company information including size, complexity, and past response behavior. We are assembling lists of important trade associations and will explore a variety of partnership activities including testimonials. In so doing, we will focus on those associations that have extensive and effective regional affiliate networks.

#### Recommendation 12

##### Unit Level Models for Small Area Estimation: Applications to Census Adjustment of Small Areas and Small Area Estimation for the American Community Survey

"The ASA members think the various small area estimation projects undertaken by the Bureau of the Census are laudable, but there are many challenges as well, as is bound to happen in any model-based approach. An issue of critical importance is model diagnostics. Researchers within the Census Bureau have access to microdata, and thus should take full advantage of unit level models for evaluation of aggregate level model for census adjustment, ACS projects or elsewhere. Also, 'to combine or not to combine' different small areas is always a very tricky issue, and an adaptive approach seems most suited for this purpose to the extent feasible.

In addition, the Census Bureau should consider special data-collection efforts in a sample of small areas in the ACS to provide feedback for future small-area-estimation research."

#### Census Bureau Response



We thank the Committee members for providing useful direction on issues concerning unit-level models for small area estimation. The Committee's recommendations seem to see two roles for model diagnostics. In one role, they recommend the use of model diagnostics for the evaluation of unit-level models. In another role, the use of unit-level models as a diagnostic for the assumptions inherent to aggregate-level models is emphasized. In response to the first suggestion, the use of predictive evaluation of unit-level models, as reported in the background reports, will continue to be used. Other diagnostic methods that may prove useful will be investigated. In response to the second suggestion, aggregate-level models will be evaluated within the unit-level model framework. This will enable decisions to be made when aggregate-level models are adequate or, if not adequate, when in-house unit-level models are most appropriate.

The recommendation that methods for adaptively combining small areas be used will be followed. Once adequate unit-level models are developed for the ACS or for census coverage, a method for adaptively finding "borrowing groups" developed by Malec and Mueller can be applied (see Institute of Statistics and Decision Sciences discussion paper, 99-23, Duke University). This method has been implemented on the NHIS and consists of extending the hierarchical model one more stage to a model of "no borrowing," then including a Dirichlet process distribution on this last stage to form data-driven discrete subsets of "borrowing groups." Unlike the usual adaptation of Dirichlet processes to nonparametric Bayesian hierarchical models that results in some parameter values having point mass, the addition of the extra level of the hierarchy forms "borrowing groups" of parameters (i.e., exchangeable groups). The developments of other, more general, approaches using partition models also will be followed and adapted, if possible.

The suggestion on the use of special data-collection methods to provide feedback on small area estimation is one of the few available ways to assess individual small area estimates with precision. However, it may be costly to implement. In lieu of collecting more data, a first step could be the use of the long-form data from the decennial census for checking small area methods for the ACS. More specifically, mock ACS samples can be selected from the census long-form data and resulting small area estimates compared to estimates from the full long form. Although this will provide accuracy measures for the general forms of models, it will not, for example, provide information on the accuracy of county-level benchmarking of the ACS. As regards imbedding additional sample requirements within the ACS to assess ACS small area estimation, two more long-term approaches will be started. First, design-based estimates of average mean square error will be the target, and the design decision will be confined to one of sample allocation to small areas. After critical modeling assumptions are identified, the development of sample designs to assess these assumptions will begin.

## Recommendation 13

### General Recommendation

"The Committee members from the ASA urge the Census Bureau to move toward standardizing language and presentation of information on measures of precision across publications."

### Census Bureau Response

We agree with the recommendation. A group has been formed within the Census Bureau to review and update Technical Paper 32, *Standards for Discussion and Presentation of Errors in Data*. This

technical paper provides guidelines to census staff for informing our data users of the important limitations of the estimates from both sampling and nonsampling error. The group will take into account the recommendation to standardize language and the presentation of information on measures of precision across publications in the revised technical paper.

## Recommendation 14

### General Recommendation

"The Committee members from the AMA were pleased to receive a progress summary from the agency and would like to continue to see similar updates in the future. This is a good way to see how advice from the Committee is being translated into action."

### Census Bureau Response

The Bureau has been providing these summaries for several years and plans to continue to do so. We are pleased that they are of value to the Committee. We also believe that a progress summary is a good way to show the Committee that their recommendations are taken seriously and, where applicable, are being translated into action.

## Appendix B.

### Agenda for the October 18-19, 2001, Meeting of the Census Advisory Committee of Professional Associations\*

Sheraton Crystal City Hotel  
1800 Jefferson Davis Highway  
Arlington, VA

Thursday, October 18

#### PLENARY (9:00 - 9:30 a.m.)

##### Joint Session

Introductory Remarks, *William G. Barron, Jr.*,  
Acting Director, and *John H. Thompson*,  
Principal Associate Director for Programs;  
Invitations from other Advisory Committees,  
*Frederick Knickerbocker*, Associate Director  
for Economic Programs  
Ballroom A&B

#### PLENARY (9:30 - 9:45 a.m.)

Census Bureau Responses to Committee  
Recommendations/Report on the  
October 2000 Meeting, *Stanley Smith*,  
Chairperson  
Ballroom A&B

#### PLENARY (9:45 - 10:15 a.m.)

Executive Steering Committee for Accuracy  
and Coverage Evaluation Policy Update,  
*John H. Thompson*, Principal Associate  
Director for Programs  
Ballroom A&B

#### BREAK (10:15 - 10:30 a.m.)

#### AEA, AMA (10:30 - 11:30 a.m.)

2002 Economic Censuses, *Bruce Goldhirsch*,  
Special Assistant, Economic Planning and  
Coordination Division  
Chair: AEA  
Ballroom A&B

#### ASA, PAA (10:30 - 11:30 a.m.)

Census 2000 Update, *Preston Jay Waite*,  
Associate Director for Decennial Census, and  
*Robert Rinaldi*, Manager, Count Question  
Resolution Program, Decennial Management  
Division  
Chair: ASA  
Ballroom C

#### LUNCH (11:30 a.m. - 1:00 p.m.) Atrium

#### AEA (1:00 - 2:00 p.m.)

American Community Survey and Economic  
Analysis, *Alfredo Navarro*, Chief, Continuous  
Measurement Design Branch, Demographic  
Statistical Methods Division  
Crystal Room VI

#### ASA, PAA, AMA (1:00 - 2:00 p.m.)

2010 Census Planning—Next Steps,  
*Preston Jay Waite*, Associate Director for  
Decennial Census  
Chair: ASA  
Ballroom A&B

#### AEA (2:00 - 3:00 p.m.)

E-Business Infrastructure, *John Gates*, Special  
Assistant for Manufacturing Programs,  
Manufacturing and Construction Division  
Crystal Room VI

Thursday, October 18

PAA, ASA, AMA (2:00 - 3:00 p.m.)

Census 2000 Supplementary Survey Data Overview, *Daniel Weinberg*, Chief, Housing and Household Economic Statistics Division  
Chair: PAA  
Ballroom A&B

BREAK (3:00 - 3:15 p.m.)  
AEA (3:15 - 5:15 p.m.)

Services Sector Data: What We Have and What We Need, *Mark Wallace*, Chief, Service Sector Statistics Division, and *Thomas Zabelsky*, Assistant Division Chief, Service Sector Statistics Division  
Crystal Room VI

PAA, ASA, AMA (3:15 - 4:30 p.m.)

Census 2000 Experiments—Results: Effects of Questionnaire and Content Changes on Responses to Race and Hispanic Items: Results of a Replication of the 1990 Census Form in Census 2000, *Elizabeth Martin*, Senior Researcher for Survey Methodology, Office of the Associate Director for Methodology and Standards; Assessing the Impact of Differential Incentives and Data Collection Modes on Census Response, *Jennifer Guarino*, Mathematical Statistician, Planning, Research, and Evaluation Division; Update on Census Evaluations, *Ruth Ann Killion*, Chief, Planning, Research, and Evaluation Division  
Chair: PAA  
Ballroom A&B

AMA (4:30 - 5:15 p.m.)

Develop Recommendations and Special Interest Activities  
Ballroom A&B

ASA (4:30 - 5:15 p.m.)

Develop Recommendations and Special Interest Activities  
Ballroom C

PAA (4:30 - 5:15 p.m.)  
Develop Recommendations and Special Interest Activities  
Crystal Room III

Friday, October 19

AEA (9:00 - 10:00 a.m.)

Chief Economist Update, *Brad Jensen*,  
Director, Office of the Chief Economist  
Crystal Room VI

ASA, PAA, AMA (9:00 - 9:45 a.m.)

Interviewer Refusal Aversion Training,  
*Thomas Mayer*, Research Psychologist,  
Statistical Research Division, and *Eileen  
O'Brien*, Survey Methodologist, Statistical  
Research Division

Chair: ASA  
Ballroom A&B

BREAK - ASA, PAA, AMA (9:45 -  
10:00 a.m.)

AMA (10:00 - 10:45 a.m.)

Promoting Business Response to the 2002  
Economic Census, *Robert Marske*, Special  
Assistant, Economic Planning and  
Coordination Division  
Ballroom C

ASA, PAA (10:00 - 10:45 a.m.)

Unit Level Models for Small Area Estimation:  
Applications to Census Adjustment of Small  
Areas and Small Area Estimation for the  
American Community Survey, *Donald Malec*,  
Principal Researcher, Statistical Research  
Division  
Chair: ASA  
Ballroom A&B

BREAK - AEA (10:00 - 10:15 a.m.)

AEA (10:15 - 11:45 a.m.)

Develop Recommendations and Special  
Interest Activities  
Crystal Room VI

AMA (10:45 - 11:45 a.m.)

Develop Recommendations and Special  
Interest Activities  
Ballroom C

ASA (10:45 - 11:45 a.m.)

Develop Recommendations and Special  
Interest Activities  
Ballroom A&B

PAA (10:45 - 11:45 a.m.)

Develop Recommendations and Special  
Interest Activities  
Crystal Room III

CLOSING SESSION (11:45 a.m. -  
12:30 p.m.)

Continue Committee and Staff Discussion  
Plans and Suggested Agenda Topics for the  
Next Meeting  
Ballroom A&B

PUBLIC COMMENT

ADJOURN (12:30 p.m.)

## Appendix C.

### Bureau Personnel Present

#### Director's Office

William Barron, Jr., Acting Director

John H. Thompson, Principal Associate Director for Programs

Gloria Gutierrez, Assistant Director for Marketing and Customer Liaison

Frederick T. Knickerbocker, Associate Director for Economic Programs

Thomas L. Mesenbourg, Assistant Director for Economic Programs

Paula Muroff, Special Assistant

Carol VanHorn, Assistant to the Associate Director for Field Programs

Cynthia Z. F. Clark, Associate Director for Methodology and Standards

Robert Fay, Senior Mathematical Statistician

Elizabeth Martin, Senior Survey Methodologist

Preston Jay Waite, Associate Director for Decennial Census

Carolee Bush, Special Assistant

Joan Bernard, Special Assistant, Associate Director for Demographic Programs

Rhonda Carney, Special Assistant, Associate Director for Demographic Programs

#### Administrative and Customer Services Division

Lourdes Hartman

Kathy Italiano

Gina Winchester

#### Center for Economic Studies

Brad Jensen, Acting Chief

#### Company Statistics Division

Ewen Wilson, Chief

#### Decennial Management Division

Robert Rinaldi

#### Decennial Statistical Studies Division

David McGrath

Eric Schindler

#### Decennial Statistical Methods Division

Alan Tupek, Chief

Alfredo Navarro

Nancy Torrieri

## Demographic Surveys Division

Chet Bowie, Chief  
Kenneth Bryson

## Economic Planning and Coordination Division

Bruce Goldhirsch, Special Assistant  
Paul Zeisset, Special Assistant  
Robert Marske, Chief, CRM Staff  
Michael Hartz  
Donna McCutcheon  
John Medina  
Laurie Torene

## Economic Statistical Methods and Programming Division

Nash Monsour, Assistant Chief  
Jane Karl

## Governments Division

Gordon Green, Chief

## Housing and Household Statistics Division

Daniel Weinberg, Chief  
Larry Long, Special Assistant  
Helen Bohle

## Manufacturing and Construction Division

Paul Hsen, Assistant Chief  
John Gates, Special Assistant

## Marketing Services Office

John Kavaliunas, Chief  
Colleen Flannery  
Elaine Quesinberry  
David Wycinski

## Policy Office

Gerald Gates, Chief  
George Gatewood

Jason Gauthier  
Dave Hendricks  
Michael Hovland  
David Pemberton

#### Population Division

John Long, Chief  
Jorge Del Pinal, Assistant Chief  
J. Gregory Robinson, Chief, Population Analysis Staff

#### Planning, Research, and Evaluation Division

Ruth Ann Killion, Chief  
Dave Hubble, Assistant Chief  
Julie Bouffard  
Jennifer Guarino  
Lance Moore

#### Service Sector Statistics Division

Mark Wallace, Chief  
Ruth Detlefsen, Assistant Chief, Research and Methodology  
Ruth Bramblett, Chief, Current Services Branch  
John Trimble, Chief, SSSD Redesign Team

#### Statistical Research Division

Tommy Wright, Chief  
Easley Hoy, Assistant Chief  
Michael Ikeda  
Donald Malec  
Thomas S. Mayer  
Eileen O'Brien  
Barbara Palumbo  
Elizabeth Ann Vacca



## Appendix D.

October 2001

### Membership List Census Advisory Committee of Professional Associations (American Economic Association)

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(Co-Facilitator)  
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## Appendix E.

### List of Background Documents

2002 Economic Census. Bruce Goldhirsch, U.S. Census Bureau. 14 pp.

American Community Survey Data for Economic Analysis. Charles H. Alexander, U.S. Census Bureau. October 18-19, 2001. 9 pp.

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